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for Volume XXIV - 1940  
SOUTHWESTERN MEDICINE



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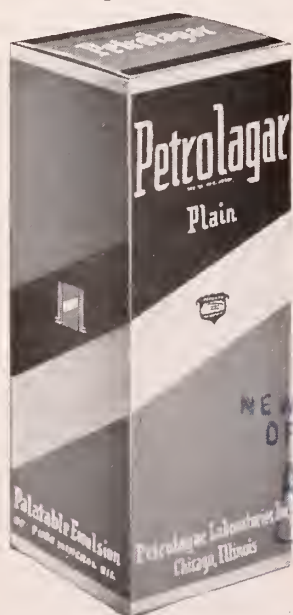
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# STUDIES IN THE AVITAMINOSES



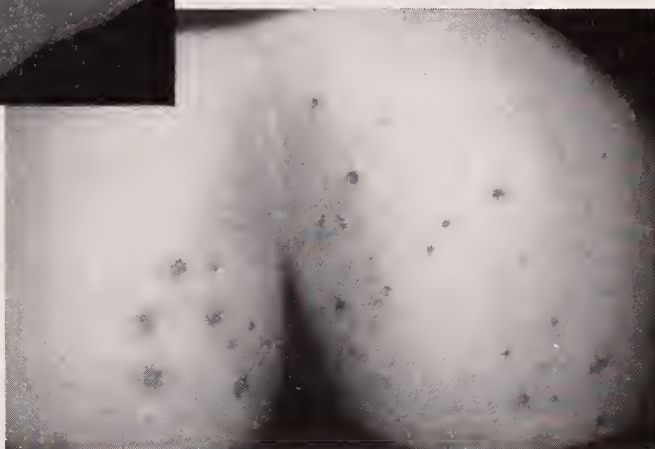
This page is the first of a series on vitamin deficiencies presented by the research division of The Upjohn Company, not merely because of the profession's widespread interest in the subject, but also because of the service which these reproductions might render toward earlier recognition of vitamin deficiency states.

## ***The Cutaneous Manifestations of Vitamin A Deficiency***



Acneform papules of vitamin A deficiency. Pustulation is rare, but crusts and scales may be observed. Dryness of involved skin precedes both types of lesions.

Goosepimple-like papules, occasionally seen in vitamin A deficiency, occur most frequently on thighs and arms, but may appear anywhere on the skin. More common than the acneform eruption.



Although the classic manifestations of vitamin A deficiency are familiar to every physician, many of these represent late stages of deprivation. In some cases, cutaneous changes may provide an opportunity for earlier recognition. These cutaneous changes, when fully developed, consist of two distinct types of eruptions—a goosepimple-like papule and an acneform lesion in which pustulation rarely occurs. The absence of perspiration is due to atrophy of the sweat glands and keratinizing metaplasia of the ducts. The papular cornified lesions are due to the keratinization of the sebaceous glands and hair

follicles. In some subjects, accentuation in pigmentation due to an increase in melanin and melanin-building pigments is observed. Unlike the ocular manifestations of vitamin A deficiency, the skin lesions respond slowly to specific therapy, requiring from 4 to 12 weeks for their eradication.

• •

A two-page insert, presenting full-color reproductions of vitamin A deficiency lesions, and so organized that it may be easily retained for future reference, appears in the January 20 issue of the Journal of the American Medical Association.



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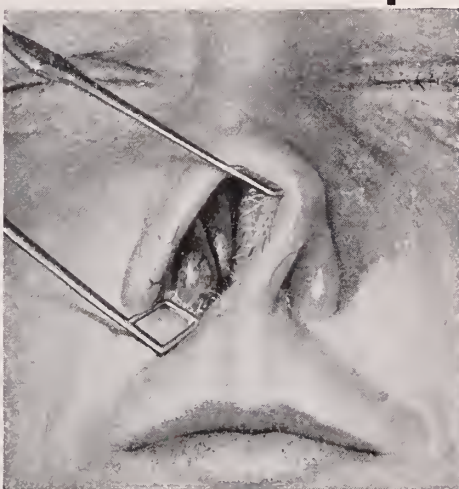


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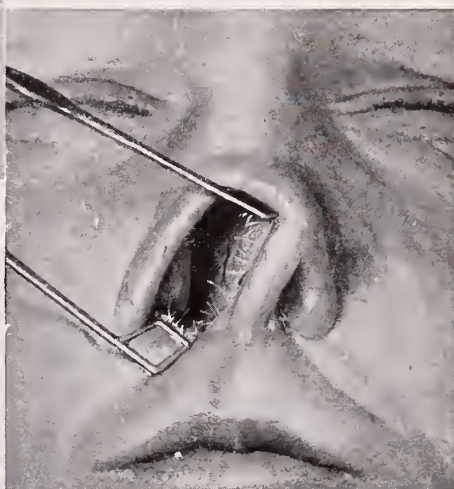


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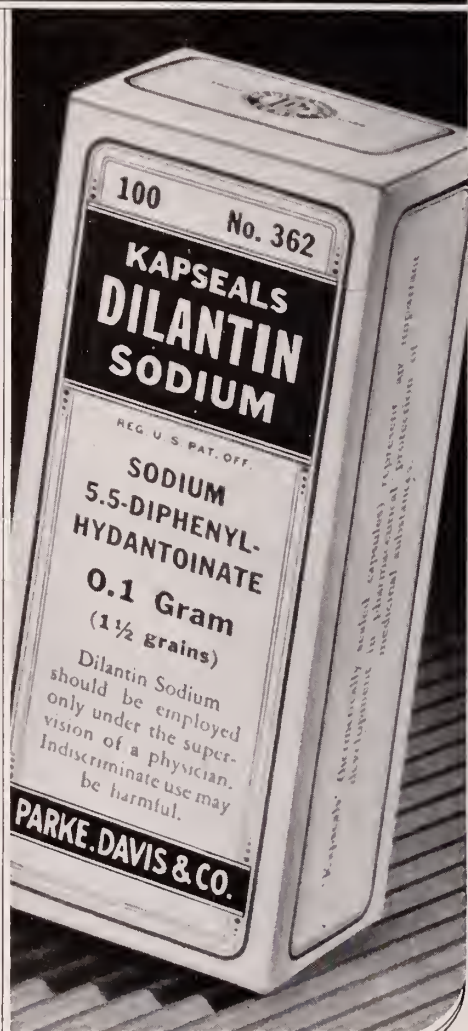


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No. 1

## Bundle Branch Block

*(Review of Cases)*

RALPH H. HOMAN, M. D.

*El Paso, Texas*

SINCE these case reports apply to accidents to the cardiac mechanism, I think it is not out of place to review in brief the general mechanism of the heart beat, naming and locating generally the different structures involved in the cardiac cycle.

### GENERAL CONSIDERATIONS

These special structures about which we are concerned consist of subendocardial specialized tissues that have to do with the beginning and transmission of the electrical impulses that precede and accompany each heart beat. The first structure of importance is the sino-auricular node. This is a comma-shaped mass of neuro-muscular and connective tissue lying just beneath the epicardium, at the junction of the superior vena cava and the right auricle. This mass of tissue receives inhibitory fibres from the vagus nerve on each side, but more from the right, and also fibres from the sympathetic, the accelerator. It gets its blood supply from the left coronary. The excitatory process originates in this sino-auricular node and for that reason it is often called the "pace-maker."

Fine fibres of specialized tissue, also neuro-muscular and connective tissue in type, beginning in the right side of the interauricular septum, near the coronary sinus, unite and form another node which was described by Aschoff and Tawara, and which carries sometimes that name but is generally designated as the junctional or auriculoventricular node. These fine fibres are interlaced with nerve fibres, ganglion cells, arterioles and connective tissue. From the junctional node, extending horizontally forward and slightly downward for a distance of about 2 cm., in the right side of the interauricular septum, is the bundle of His, or the A. V. bundle. This is sharply demarcated and is made up of large fusiform cells in parallel arrangement and ensheathed in a bundle. This bundle of His continues to the junction of the interauricular septum with the triangular membranous portion of the intraventricular septum. At this point the bundle of His divides into a right and left branch and splits across the interventricular system. These branches are termed respectively *right* and *left* bundle branches.

Read before the El Paso County Medical Society, Sept. 25, 1939.

The right bundle branch extends as a single bundle to the base of the anterior papillary muscle and there breaks up rapidly and spreads out beneath the entire endocardium as the Purkinje network of the right ventricle. The left bundle branch goes through the membranous portion of the interventricular septum, divides immediately just beneath the left ventricular endocardium, just below the junction of the right anterior and posterior cusps, into two main groups of fibres, one of which goes to the base of the anterior and one to the base of the posterior papillary muscle. From these points the branches break up into the Purkinje network of the left ventricle.

It is well to note here that while the vagus sends fibres to the S. A. node, the A. V. node, and the bundle of His, there are apparently no vagus branches extending past the point of division of the bundle of His into the bundle branches. As I stated before, the physiology of the initiation and spread of the impulse of the heart beat is closely associated with these structures, and this constitutes the basis of electrocardiography. The theory is that there is in these specialized tissues, as well as in the ordinary heart muscle, a constant building up and discharging of physiochemical combinations which cause a distinct change in the electric potential in these different parts. This process occurs apparently at a constant rate, and the accumulation rises to a constant level where it is then touched off or discharged. It then falls to the previous low level, liberating a kinetic energy of contraction. Since the S. A. node is capable of a faster rate of building up and discharging, it naturally falls into the role of control or pace-maker. The hydrogen concentration and temperature of the blood and of these specialized tissues have been shown to be closely associated with the rate of initiation and spread of the impulses. So then we have an impulse generating in the S. A. node, passing through the muscles of the auricles, gathering in the specialized tissue which forms the A. V. node, and passing through this node into the bundle of His, then following into the bundle branches and through their divisions into the final Purkinje network to the ventricular muscles.

Let us suppose that an impulse starts normally at the S. A. node, travels down across the auricles,

CLIPPING

continues down the A. V. node and bundle of His, but is blocked in the right or left bundle branch. If the block occurs in the right branch the impulse travels on down the left branch, spreads over the left ventricle normally and causes a normal contraction on that part. The impulse is conveyed to the right ventricle in a circuitous route, probably through the interventricular septum, and causes a delayed contraction. If the left bundle branch is blocked, which is much more common, the reversal of this procedure takes place. It is estimated that impulses travel through the specialized conducting mechanism at a rate of about 5,000 m.m. per second, and through the ordinary heart muscle at about 500 m.m. per second, so we can see there is an appreciable pause between the contraction of the ventricle where there is no block and the one where there is an interference with normal conduction.

Left bundle branch block is not uncommon in general practice, being much more frequent than right bundle branch block, in accord with the frequency of disease of the left ventricle as compared with the right. It is found for the most part in patients with regular rhythm, and for that reason it is difficult to recognize without the help of an electrocardiogram. It is possible, however, to suspect its presence on account of one or two fairly common physical signs. Whenever a diastolic gallop rhythm is heard the condition should be suspected, due to our knowledge of the delay in contraction of one ventricle over the other. At times a bifurcated first sound at the apex can be picked up. And, also, pulsus alternans is very common in these cases, and if this condition cannot be detected by radial pulse palpation, it can be easily picked up by the sphygmomanometer. In fact, the frequent association of bundle branch block, gallop rhythm, and pulsus alternans makes it useful to suspect the presence of one if the other two are noted.

#### ETIOLOGY OF BLOCK

The commonest cause of bundle branch block is coronary sclerosis. This may be an accident to one of the larger arteries or to the small branch supplying the bundle directly. This may be a gradual leading to faulty nutrition and an eventual fibrosis, or it may be sudden. At autopsy it is extremely difficult to tell which of the main branches are at fault because the general appearance of the two are apt to be identical in the old sclerosis cases. It must be remembered, however, that only a few undamaged fibres can carry the excitatory impulse.

Next in importance is hypertension with hypertrophy or dilatation. This condition, in turn, interferes with proper blood supply to the fibres. Less common causes are: syphilitic infection, gummatous or diffuse; acute infection, the chief one of which is diphtheria; rheumatic fever, and bacterial endocarditis. It has been noted in a transient or functional form as a result of toxicity in digitalis or quinidine therapy.

Males show bundle branch block in a ratio of

about 3:1 over females, due to the greater likelihood of coronary disease in the male. It is usually found in persons over 50, but two out of my three cases are in women, and both are considerably under 50 years of age.

#### CLINICAL ASPECTS

There are no symptoms arising directly from the condition. Attendant symptoms are due to the diseased condition of the heart and are usually found in the form of those of angina pectoris, congestive failure, and palpitation due to other arrhythmias. I have mentioned signs before, but I might say in addition that while cardiac enlargement is frequent, valvular disease is infrequent. X-ray, of course, is without value as a diagnostic aid.

Authors vary in their opinion concerning the prognosis of this condition. Of course, the condition itself is never fatal, but its appearance is of grave prognostic significance. Right bundle branch block is not nearly as common as left, and is more apt to be functional and without as marked portent as the latter. White says bundle branch block may be entirely unimportant in rare cases, occurring as a more or less transient effect of vagal stimulation, or of fatigue in excessive tachycardia. He also states that although the prognosis is to be based partly on other evidence of heart disease, the finding of true bundle branch block of high degree makes the prognosis always a serious one, the average duration of life after its discovery is not more than a few years. Levine also states that the average length of life after its discovery is usually but a year or two, but there are exceptional cases that carry on fairly satisfactorily for many years. Herrmann states that the presence of bundle branch block is of serious prognostic significance.

All authors agree that there is no specific treatment for bundle branch block, as it does not by itself produce any handicap. It merely reflects the condition of the heart muscle and therapy is directed at the general state of circulation.

It must be remembered that there are conditions of delayed impulse without complete block in the bundle branch, and there are cases of interruption of conduction in the smaller branches and Purkinje network. These give, to the varying degree, the same electrocardiographic findings as complete bundle branch block, and the clinical implications of incomplete bundle branch block and arborization or Purkinje network block are similar to that of complete bundle branch block. Occasionally this condition will be found when there is little else to lead one to suspect heart disease, and in that way it becomes a help diagnostically. In fact, I quote Levine, "The greatest value of electrocardiography is in the detection of significant abnormalities in the ventricular complexes when the rest of the examination is essentially negative."

#### CASE REPORTS

*Case No. 1.* Male, age 52. Patient first consulted me on March 29, 1938. His chief complaint was that he had attacks of dizziness and suffered from shortness of breath. This man was short and fat; full-blooded type. His pulse rate was 86.



Blood pressure, 190/126. There was moderate edema of the feet and ankles. Liver was moderately enlarged. The second aortic sound was accentuated. Percussion indicated the heart was enlarged to the left. Electrocardiogram was made on this patient and showed the following: QRS interval was 0.12. QRS was notched in all leads. Relation of the QRS with the T waves in leads I and III indicated a bundle branch block.

This patient was put on a reducing diet and reduced his weight from 205 to 176. He was put on digitalis—1 cat unit 3 times a day for 6 days and then 1 cat unit a day for a period of about 5 weeks. At the same time he was put on aminophyllin, grains  $1\frac{1}{2}$ , night and morning.

I have seen this patient at intervals of very 6 weeks to 2 months since he first consulted me, and as long as he keeps his weight down and doesn't try to overdo he feels very well. Two tracings made since the first one show no appreciable change.

**Case No. 2.** Female, age 42. Patient first consulted me on December 18, 1937. Her chief complaint was headaches and dizziness. Examination showed her heart to be enlarged in all dimensions. Pulse rate was 80. Gallop rhythm was present and there was re-duplication of the first sound at the apex. Her history showed that she had been told some 5 years previously, when being examined for insurance, that she had high blood pressure. Application wasn't sent in. Has felt well ever since until about 3 months ago when the headaches and dizzy spells started. Her family physician told her she had high blood pressure, but did not institute any treatment. Examination showed there was no edema and no enlargement of the liver. No pulmonary congestion. Her blood pressure when I first examined her was 209/160. She stated, however, that it had been running higher than that and seemed quite gratified that it was down that low. She was complaining at the time of some pain in the chest, over the precordium.

Electrocardiogram showed a left bundle branch block. I put this patient on some capsules containing 1/8 gr. phenobarbital, 4 grs. acetanilid and  $\frac{1}{2}$  gr. theophyllin. She returned to me in 2 weeks, having obtained no relief. At that time I put her on nitro-cyanates compound, 1 teaspoonful 3 times a day. At the end of 10 days her blood pressure had dropped to an average of 180/130 and she was feeling much better. I had kept her on modified rest during this time and I advised her to return to her home and keep up the nitro-cyanates compound at intervals and to return to me in about 3 months. When she came back she said that all of her symptoms had returned. Her blood pressure was ranging around 190. I then put her on aminophyllin, grs.  $1\frac{1}{2}$ , twice daily. She returned to me again in about 2 weeks and her blood pressure was 175, her headaches were gone, and her nervousness and apprehension had disappeared. I had a letter from her a few days ago, in Georgia,

and she says she is doing very nicely and not having any trouble with the headaches.

**Case No. 3.** Female, age 40. Patient first consulted me May 19, 1939. This lady has been under my brother's care for tuberculosis for  $3\frac{1}{2}$  years. This was her second breakdown, the first one having been about 12 or 14 years ago, at which time she said she had some heart trouble also. She was considerably overweight, and her chief complaint was shortness of breath with pain in the chest and palpitation. Examination showed bifurcated or re-duplication of the first sound at the apex. Blood pressure was 180/100. She had a soft blowing murmur over the mitral area, systolic in time. The second aortic sound was loud and tambour-like. Percussion showed the heart enlarged about 2 cm. to the left. Electrocardiogram showed a left bundle branch block.

She was put on a diet to reduce her weight and was kept on a rather rigid reducing diet for about 4 weeks, during which time she lost about 12 pounds. During that time she was taking aminophyllin, grs.  $1\frac{1}{2}$ , twice daily. She returned to me on July 29, 1939, at which time her blood pressure was 168/100, and her weight 129 $\frac{1}{2}$ , as compared to 145 when I first saw her. She was very comfortable, the pain in her abdomen had gone, and she was not being bothered with palpitation.

The peculiar thing about these cases is that two are in much younger patients than we usually expect to find bundle branch block, and the ratio is reversed as to sex, according to most authors. Of course, 3 cases are not enough to form any sort of statistics. It was also interesting to me to note all 3 are doing well, the first a year and a half after discovery of the condition; the second almost 2 years after my first examination, and the third one, having just recently consulted me, is apparently not showing any ill effects from the condition.

#### COMMENT

In my paper I am indebted to George Herrmann for most of the description of the mechanism and special anatomy of the heart. I also took excerpts from Levine's book on "Clinical Heart Disease," and from White's book, "Heart Disease," on the prognosis of the condition.

Considering these opinions and those of other authors. I think it best to take into consideration all of the history and other findings in bundle branch block before a prognosis is given. There is no doubt in my mind but what a number of cases having complete or partial bundle branch block carry on for a number of years. I have heard Dr. G. Werley, of El Paso, state that he has seen a few cases alive for 10 or 12 years, or a longer period of time, following his first discovery of a bundle branch block.

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## Treatment of Fractures of the Neck of the Femur by Internal Fixation

WILLIS C. CAMPBELL, M. D.

Memphis, Tenn.

**D**URING the past decade treatment of complete central fractures of the neck of the femur by internal fixation has practically been adopted as a routine method of procedure by the vast majority of orthopedic surgeons throughout the country.

Smith-Petersen is responsible for reviving and popularizing the procedure. He devised a three-flanged nail which provided a maximum amount of surface contact for cohesive fixation, prevented rotation, and displaced a minimum amount of

bone. Various modifications of the principle of internal fixation have been introduced since Smith-Petersen's article appeared in 1931, both as to the manner and type of screw, pin or nail and their method of introduction. Gaenslen, Austin Moore, Knowle, Henderson and other have devised methods of fixation and technics of their own and reported excellent results.

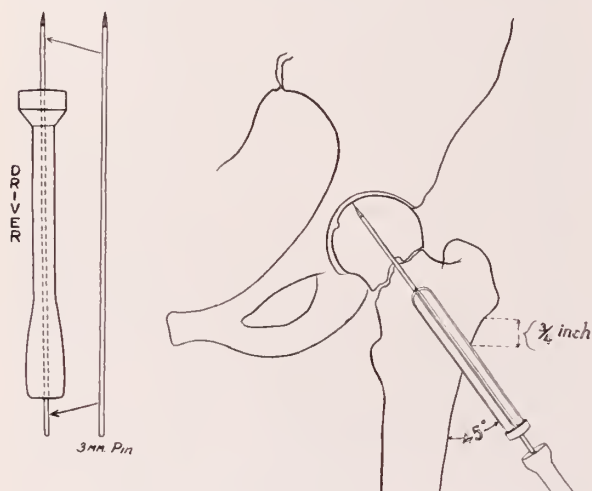


Fig. 1. Graphic illustration of Johansson method of securing proper direction of nail. The author's tunnel driver greatly facilitates application.

customed to its use. On the contrary, however, internal fixation of fractures of the femoral neck should not be considered as a simple procedure and be undertaken by inexperienced hands, or by the experienced except under proper surgical surroundings and with adequate x-ray control in the operating room to guide the accurate insertion of pins, nails or screws.

The success of internal fixation in the treatment of fractures of the neck of the femur has been practically universal. The author was a member of committees of the American Orthopaedic Association and the American Academy of Orthopedic Surgeons, which studied the results of the Whitman method and internal fixation respectively. It was conclusively shown that the latter method could and did materially improve the very discouraging results of the Whitman method.

Other methods than these have been employed, such as bone graft and the Lorenz osteotomy, but no large series of cases has been reported. While the results probably would be good, the bone graft of the neck of the femur is far too radical a procedure to be used routinely for treatment of fresh fractures of the neck of the femur, having relatively little advantage over fixation by metal and numerous disadvantages, such as the extensiveness of the surgical procedure, inefficient fixation, long



Fig. 2. (Case 1.) Nail in position, firmly securing fragments.



Fig. 3. (Case 1.) Solid bony union after removal of nail. Note a small piece of metal remaining in the head, a portion of the end of the tunnel. This complication should not occur if heavier material is used, as modified by the author.

With the exception of a few surgeons, the original method of Smith-Petersen, arthrotomy of the hip, open reduction, and insertion of the nail under direct vision, has long since been abandoned for the so-called "blind method" of nailing; after reduction of the hip, fixation is inserted through a small lateral incision over the trochanter, the direction of the pin being checked by a series of two view roentgenograms. The author prefers a Johansson modification of the Smith-Petersen nail for fixation, first inserting a guide pin; if the position of the pin is satisfactory, a Smith-Petersen nail with a tunnel in its center is threaded over the guide pin and driven into proper position. Each method of internal fixation seems to be reliable and dependable in the hands of those ac-

customized to its use. On the contrary, however, internal fixation of fractures of the femoral neck should not be considered as a simple procedure and be undertaken by inexperienced hands, or by the experienced except under proper surgical surroundings and with adequate x-ray control in the operating room to guide the accurate insertion of pins, nails or screws.

immobilization in a plaster-of-Paris cast with consequent possibilities of hypostatic pneumonia and decubital ulcers, and a long and extensive post-operative convalescence. On the contrary, internal fixation by metal of central fractures of the neck of the femur has proved to be an excellent procedure, its disadvantages being far outweighed by the multiplicity of advantageous features.

In 1937, the author made a preliminary report of this method of treatment, having employed the three-flanged nail in 35 cases of complete, central or intracapsular fractures of the neck of the femur. This series has now been increased to 115 cases.



Except for patients who are moribund upon admission to the hospital, internal fixation is used without reservations for all central fractures of the neck of the femur, the operation being performed as soon as feasible following the fracture. These

possible disturbance in their physiologic routine is desirable, local anesthesia offers many advantages. On the other hand, some patients are uncooperative, and complete muscular relaxation cannot be secured, inhibiting attempted reduction of the



Fig. 4. (Case 2.) Anteroposterior view, nail in position.



Fig. 5. (Case 2.) Lateral view, nail in position.

elderly patients are never comfortable in traction or splints, every movement of the hip being painful. In consequence, the longer they lie upon their backs the more possibility of inviting complications. In addition, the suffering incident to neces-

fracture. In such instances, a combination of local and general anesthesia may be appropriate. Recently the author has employed Pentothal, and has so far found it to be superior to other types of general anesthesia, the incidence of postoperative



Fig. 6. (Case 3.) Woman, age over 80, nail in position.



Fig. 7. (Case 3.) Firm bony union after removal of nail at the end of seven months.

sary movement further weakens their already debilitated condition.

The introduction of the Smith-Petersen nail or other method of internal fixation may be performed under either local or general anesthesia. Since this type of fracture occurs most often in old and debilitated individuals, in whom the least

complications so far being nil. Perhaps this type of anesthesia will entirely supplant all other types of general anesthesia and also local anesthesia in inserting internal fixation for fractures of the neck of the femur.

The technic for local injection of the fracture, the introduction of the nail, and the postoperative

treatment have been previously described by the author,<sup>1</sup> and will not be repeated. Rather, the 115 cases in which the procedure has been employed will be analyzed as to age and sex, mortality, osseous union, and subsequent arthritic changes. The ages of these patients range from 17 to 90 years, 17% being between 50 and 60, 36% being between 70 and 80, 23% between 80 and 90, 14% between 90 and 100, and 10% in the remaining

check-up or were not studied for a sufficient period of time; others are of relatively recent origin. Fifty-five cases, however, which had sufficient qualifications for an end result study, are presented as follows: 86.5% had a complete solid union; of the remaining 13.5% with non-union, many of these were treated before the technic of the operation was sufficiently perfected to place the nail accurately. In a follow-up of these 86.5%



Fig. 8. (Case 4.) Bending of wire in the head of the bone, which is a serious complication and will not occur if stronger material is used.



Fig. 9. (Case 4.) End-result in Case 4 after employing the nail.

decades. Thus, 90% of the fractures were observed in patients between the ages of 50 and 90 years.

By internal fixation, the mortality during the first postoperative month was reduced 50%, the mortality in this series being only 5.7%. This is practically within the death expectancy of the age group in which this fracture most commonly occurs.

with solid union, 15.5% of the patients developed arthritis of the hip joint following aseptic necrosis of the head of the femur. Possibly this latter figure may be reduced in subsequent series by more perfect reduction, accurate placement of the nail, and postponement of weight bearing until sufficient time has elapsed to permit adequate revascularization of the femoral head.



Fig. 10. (Case 5.) Apparently solid bony union but with possibly aseptic necrosis of the head. Time alone will determine the functional result.



Fig. 11. (Case 6.) Destructive changes in the head, evidently due to extreme atrophy.

In analyzing the end results as to osseous union, only those cases have been selected which have been followed both clinically and roentgenographically for a sufficient period to be certain that union is solid. Some cases did not return for a

## CONCLUSIONS

From a study of these 115 cases the following conclusions can be drawn in comparison to the previous method of treatment, the Whitman abduction method and other procedures, which neces-



sitate immobilization in a body cast; motion remains unrestricted in all joints including the affected hip. and stiffness of the joints, which is a usual consequence of plaster fixation, is avoided; the patient's position may be changed at frequent intervals and he may be allowed to sit up in bed on the day of the operation. This had been a very vital factor in the prevention of common post-operative complications, particularly hypostatic pneumonia, and has been a very valuable adjunct in so far as the patient's comfort is concerned. Further, the period of hospitalization has been materially shortened and the patient thereby afforded a substantial financial saving. In our series, fixation by the Smith-Petersen nail has afforded a sure constant means of immobilization of the fracture, thereby eliminating the slight motion at the fracture site and affording optimal conditions for revascularization of the head of the femur and an early bony union. In expert hands, the procedure may be considered as relatively simple, at-

tended by little surgical shock, and by a low post-operative mortality. As such, internal fixation of fractures of the neck of the femur by metal pins, nails or screws may be at the present time considered the best method of treatment.

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## Electrosurgery and Radiotherapy for Breast Cancer

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CANCER appears to be the most important single disease attacking the human race today. While the death rate from disturbances of the heart and circulatory system leads all other diseases, cancer is a close second. Furthermore, if we eliminate those cases where vascular disturbances are terminal manifestations of other diseases, then cancer becomes first.

The number who die annually from cancer is appalling. It has been stated that for every death from cancer there are two persons living who possess cancer. This would indicate that there are more than a quarter of a million people living, with cancer, in the United States. It has also been estimated that there are living an equal number of persons with benign tumors; therefore, there are approximately one-half million people in the United States with a tumor of some sort.

What course can the medical profession best pursue in offering aid to this great group of patients?

The mortality rate from tuberculosis 20 years ago stood next to that of the circulatory diseases. In the meantime, through public education, early symptoms have been pointed out and the scientific developments in hygiene, general care and medical treatment of the tubercular patient has reduced it from the second to the seventh place. I am inclined to agree with McCarty, who states, "There are enough known facts, if properly and extensively applied, to solve the cancer problem." We may, therefore, be encouraged in our approach to the solution of the problem of cancer by the example of the accomplishments in the control of the "Great White Plague."

#### BREAST CANCER

Progress has been made in the control of carcinoma of the breast, but the results of our efforts as a whole are far from satisfactory. In the treatment of malignant conditions in general, we find breast cancer one of the most difficult to handle. As pointed out by Pfahler, speaking before the Fifth International Congress of Radiology, "The operative mortality as reported from the Bilroth Clinic 50 years ago was 23% and the 3-year cures were only 4.3%, while today operative mortality varies from less than 1% to 5%, and the 5-year cures vary from 70% in Stage I to 23% in Stage II (no longer encapsulated within the breast), and almost nil in Stage III." In his work on neoplastic disease, James Ewing says, "From clinical and pathological studies I have drawn the impression that, in dealing with mammary cancer, surgery meets with more peculiar difficulties and uncertainties than with almost any other form of the disease. The anatomical types of the disease are so numerous, the variations in clinical course so wide, the paths of dissemination so free and diverse, the difficulties of determining the actual conditions so complex, and the sacrifice of tissue so great, as to render impossible in a majority of cases, a reasonably accurate adjustment of means to ends." The management of breast cancer is made increasingly difficult because a certain number of cases will develop metastasis while the primary tumor is yet exceedingly small. Furthermore, the primary site is accessible to accidental trauma and injuries by palpation, as well as damage through physiological phenomena, all of which contribute greatly to early metastasis.

A new era in the treatment of this disease was established in 1888 when those famous surgeons,



Halsted and Willy Meyer, working independently, recorded their methods for radical amputation of the malignant breast. The advantage gained through electrosurgery has probably been our greatest contribution to the surgical technic they advocated. Another contribution was introduced when irradiation was proven to be a useful adjunct to surgery.

Radiotherapy is becoming increasingly useful because of technical refinements which have resulted from more perfectly designed equipment and years of clinical research in medical radiology.

Electrosurgery, while not new, has entered the field of surgery with great impetus because really skillful technic has become possible through the use of highly efficient surgical current generators.

With these advanced modalities at our command efficiency in the control of breast cancer has been materially increased.

### DIAGNOSIS

In the diagnosis we must use all available means in an effort to detect the true situation in the breast, and we must also include a general examination of the patient and such other special examinations as may seem consistent, after the clinical history and the general physical findings have been considered. Physicians who are making clinical examinations of patients should acquaint themselves thoroughly with the practical points in the diagnosis of breast conditions and then they should consider themselves morally bound to pursue further any clue that may be developed in their findings until a correct conclusion can be established.

In every discussion of the diagnosis of breast conditions, it is well to enumerate the principle symptoms to be found when cancer is present. I will give them in the order of what appears to be those of greatest frequency and significance:

1. A lump in the breast.
2. A retracted nipple.
3. Diffuse enlargement and increased density.
4. Pain in the breast.
5. Bloody discharge from the nipple.
6. A lump in the axilla, supra- or infra-clavicular region.
7. Erosion of the nipple.
8. Ulceration of the breast.
9. Nodules in the skin.
10. Pruritis of the areola and nipple.
11. Inflammation of the breast.
12. Dimpling of the skin at any point of the breast.
13. Swelling of the arm.
14. Deep, boring bone pains in any location.

There are many other symptoms more infrequently found that are related directly or indirectly to breast cancer. It is obvious that a lump in the breast is the most important finding in the diagnosis of the malignant breast. In three out of every four cases this is the only symptom. In the examination of a large group of patients who have discovered a lump in the breast, the responsibility assumed by the physician becomes very great. It

is exceedingly important, before special investigations have been completed, to give careful consideration to the general clinical and physical findings and they should also be properly correlated with the history.

In a very large portion of the cases the findings by palpation and inspection are of such a character that the diagnosis of cancer becomes almost certain, e. g., when a localized tumor mass is encountered, in which the skin has become involved or where it is undergoing fixation to the deeper tissues of the thorax, the suggestion of a malignant tumor becomes very strong. In addition to palpation and inspection, we must take into consideration the segment of the breast in which it is located, its relation to the other structures of the breast, the findings in the axilla, the supra- or infra-clavicular spaces, as well as the opposite breast.

Transillumination in the diagnosis of breast tumors, as first suggested by Ewing, has proven to be helpful in determining their location, size and relative light density. Blood is always dark in transillumination; therefore, hematomata and hemorrhagic cysts show very clearly. Hemorrhage created by aspiration biopsy or trauma of any character may be detected. Small dark shadows near the nipple often prove to be papillary cystadenoma, especially when found in conjunction with nipple discharge. It is not possible to differentiate carcinoma from fibrous mastitis and other benign lesions, consequently the evidence derived from transillumination must always be taken into consideration with other data.

Radiography of the breast has become an interesting and quite useful field of investigation in breast tumor diagnosis. Radiographic technic requires utmost care. It is not practicable to adopt a routine technic for all cases because the anatomical variations are so great. When the findings are studied in the light of the information that has been so carefully recorded by Warren, Lockwood and others, they form a very important part of the general diagnostic data. Mammography and aeromammography indicate x-ray examinations of the breast after introducing contrast material into the laciferous ducts or other tissues of the breast. The investigations in this field, as introduced by Hickens, constitute a new factor in the diagnosis of conditions of the breast. It would appear that this field may bear new and useful aids in diagnosis as research investigations are extended.

### BIOPSY

Of all the methods of investigation in the diagnosis of cancer of the breast, a biopsy is the most satisfactory. The object of a biopsy is to secure a suitable piece of tissue from which a satisfactory microscopical report can be obtained with the least possible harm to the patient. Admitting that there is much to be said against a biopsy of any form for the diagnosis of breast cancer, we must all admit that it gives the physician who is responsible for the treatment and management of the case data which more than any other indicates the form of

therapy best suited to the particular requirements of the individual, and it goes far to make better prognoses. In fairness to all methods it must be pointed out that a biopsy does not always yield conclusive evidence, and that, regardless, a certain number of lesions will remain undetermined, even after biopsy of any form. Quoting Ewing, "A lesion may be neither cancer nor not cancer. It may be in the process of becoming cancer, and in these intermediate phases it may be impossible to determine just where the lesions belong." It is not the purpose of this paper to go into the problem of microscopical diagnosis of tumors other than to say that it is indeed a very difficult field, even for the most experienced tumor pathologist.

The methods by which a biopsy may be performed become exceedingly important in breast diagnosis. The aspiration biopsy in use for many years, but applied with new impetus in tumor diagnosis by Martin, Stewart and Ellis of the Memorial Hospital in New York City, becomes of great value when applied with proper technic. The method is advocated almost routinely in these examinations by such men as Adair, Pack and others, who believe there is no essential danger, as it is performed in their work. It must be conceded, however, that there are some very definite limitations to aspiration biopsy in breast diagnosis. Large cellular tumors will yield an abundance of material, enabling the pathologist to make a positive diagnosis. The scirrhous form of cancer and small hard nodules are more difficult to aspirate without undue squeezing manipulations of the tumor, which obviously tend to push malignant emboli toward the axilla. As pointed out by Adair, the 18-gauge needle entering the tumor does not tear the tumor capsule and is therefore less liable to distribute malignant cells than biopsies with instruments especially designed for the punch method, etc.

Surgical biopsy, in certain cases, is warranted. For this form of biopsy, electrosurgical technic seems almost imperative. The skin incision and the entire resection should be done with cutting currents, and all hemorrhage controlled by electricity, not with ligatures. When it is decided to remove a portion of the breast which contains the entire tumor mass, utmost care should be taken in placing traction instruments on the part being removed in order to avoid crushing and the subsequent dissemination of malignant cells which may otherwise be held in situ. The margins of the incision must be protected with gauze throughout, as the operation progresses. This will aid in preventing the implantation of cancer cells into the incision before closure. The very great importance of these precautions is obvious when we consider the ease with which cancer cells may be expressed from the tissue during operative manipulation.

It is not desirable to cut into a tumor mass during a surgical biopsy. It may be undertaken, however, with electrosurgery more safely than with standard methods of surgery.

When the tumor has a marginal location in the

breast, a V-shaped mass of breast tissue should be removed well beyond the margins of the tumor. In closing, a small, plain gauze or Penrose drain should be inserted and the skin coapted with metal clips. No attempt should be made to obliterate space beneath the skin with ligatures. The post-operative dressing should include moderate but adequate compression with fluffed gauze in order to approximate the skin and subcutaneous tissues with the underlying structures. Avoid the use of artery forceps or any crushing instrument on tissues not removed.

When the tumor has been removed, it should be incised with a sharp knife. If it is found to appear as dense cicatricial tissue with the characteristic chalky streaks on the cut surface of the tumor, the pathologist is justified in recommending complete enucleation of the breast without waiting for the confirmation of frozen sections and further microscopical diagnostic assistance.

#### TREATMENT OF BREAST CANCER

Because there are so many conditions which produce wide variations in the character of the malignant breast, there can be very little uniformity in technic for therapy. In deriving a plan of management it is well to consider:

1. The patient's true state of general health and all measures for elevating and maintaining it at as high a level as possible.

2. Pre-operative irradiation of the breast and to the lines of lymph drainage from the part involved.

3. The removal of the breast, if it is considered operable, using the most advanced technic in the field of electrosurgery.

4. Post-operative radiotherapy following a technic that has been carefully planned to meet the requirements of the case. This will necessitate further consideration of the character of the pre-operative radiotherapy and a conference with the pathologist who has completed his study of the tissues removed and who has determined its malignant grading.

Pre-operative radiotherapy should begin as soon as a reliable diagnosis of cancer has been made, regardless of the stage of the disease. All doubtful cases should receive irradiation while diagnostic methods are being completed.

Any attempt to employ a standard routine technic for pre-operative radiotherapy seems impractical. The technic must be modified from case to case because of the variations in the stage of the disease, the anatomical variations (e. g., the flat or pendulous breast) the age, the general health of the patient, the malignant grading, etc. The essential requirements are proper training and experience in radiotherapy and the availability of apparatus designed to meet the demands. It appears that supervoltage or especially hard rays certainly are not being given serious consideration at this time in this field of therapy. So far as I am aware, no one has recommended the use of voltages above 200 k.v. In general, the requirements are a beam of x-rays with a half value layer



of approximately 0.5 mm. of copper for the breast and 0.75 or 1.0 mm. of copper half value layer for the axilla and clavicular portals. A desirable plan is to aim to give 400 to 750 r into the breast each week for two weeks by the short method and four weeks by the longer method. In the full-sized breast (15 centimeters) this may be given through two tangential breast portals, administering approximately 200 r, measured in air, or 260 r, measured on the skin, per day for 5 or 6 days of each week. Through the axillary portal and the anterior and posterior clavicular portals the depth dosage must be brought up to at least 1,000 r also during the period of the treatment of the breast portals.

In some cases it appears well to establish an artificial climacterium. This requires the administration of approximately 750 r within the pelvis. One extra week is necessary for this treatment after the pre-operative breast irradiation and before the operation is done.

It will be observed that by the short method the operation may be done 21 days after the pre-operative radiotherapy was started, except where the extra week is taken for producing an artificial climacterium, when it is advisable to delay the operation until 28 days after the pre-operative radiotherapy was started.

In cases where the longer pre-operative radiotherapy is planned, the total dose into the breast will reach 75 or 100% more and consumes 4 weeks, and 5 weeks when the artificial climacterium is produced. With this amount of radiotherapy, operation should be withheld until 2 or as much as 6 weeks have elapsed following all radiotherapy.

Where the short method of pre-operative radiotherapy is employed, it is intended that the operation will be followed by post-operative radiotherapy. Where the long method of pre-operative

radiotherapy is employed, post-operative radiotherapy may be withheld. In all treated cases, regardless of the plan of management, frequent observations must follow in order to detect early any development requiring further attention.

#### SUMMARY AND CONCLUSIONS

Radiotherapy may be employed to an advantage in practically all cases of breast cancer. In Stage I it may be omitted since we can expect more than 70% of 5-year good results with surgery alone. However, it is advisable to give post-operative radiotherapy in all cases with the possible exception of those cases where long pre-operative radiotherapy has been given. When all Stage I cases are carefully studied for those in which radiotherapy should be used, we can expect to improve the results of surgery alone by more than 10%.

Electrosurgery should be employed in all breast surgery.

From the statistics it appears that we can expect about 23% of 5-year cures in Stage II with surgery alone. With combined pre-operative radiotherapy, electrosurgery and post-operative radiotherapy the 5-year record will reach 40 to 50%.

In Stages III and IV the radiologist should exercise his best ingenuity in the effort to administer palliation. The frequency of treatment, the rate of administration and the total dosage must be directed with care along with such other treatments as may be helpful in maintaining the patient's general resistance and state of nutrition. Even in certain far advanced cases surgery may favorably supplement radiotherapy. It must also be remembered that in Stage III and IV cases radiotherapy alone does effect palliation in a large number and 5-year cures in a few cases.

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## Use of the Miller-Abbott Tube\*

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IT WAS observed by Wangenstein<sup>1</sup> that frequently following an enterostomy for the relief of intestinal obstruction, after the initial escape of the bowel content (fluid and gas), the intestine restored its continuity, curing the obstruction. From this observation he was prompted to attempt decompression of the bowel, using continuous suction syphonage by the use of a nasal catheter which entered the stomach or duodenum.<sup>2</sup> Finding this to decompress successful the distended gut, the Wangenstein suction apparatus was developed.<sup>3</sup> This method of emptying an obstructed or atonic gut is now widely used and has undoubtedly saved more lives than any other surgical device which has been developed in the last decade. The duodenal tube (Levine tube) which has been routinely used with the suction syphonage is of just enough

length to enter the proximal portion of the duodenum. For this reason it has had its limitations.

Although it has been shown that the usual cause of death in high intestinal obstructions is the loss of chlorides from vomiting,<sup>4</sup> this does not hold true in obstructions of the lower portion of the bowel. There has been no definite evidence produced to prove the theory that death is due to the absorption of toxic products in the bowel lumen. In fact, most of the experimental work in this direction indicates that there is little if any absorption in the distended intestine. The most common cause of death in these cases is due to perforation of the gut wall with a resulting terminal peritonitis. The factors leading to this end are increased intra-enteric pressure, with a diminution of the venous flow from the intestine. As a result, the viability of the wall is lowered, allowing permeation of the

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bowel wall by bacteria and ultimately perforation and peritonitis. The cause of this increased intra-enteric pressure is due to an accumulation of fluids and gas in the intestine. Rowntree<sup>5</sup> has shown that approximately 7,000 c.c. of fluid are poured into the alimentary canal daily by the activity of the alimentary glands (saliva, bile, pancreatic juice, gastric juice and succus entericus). Swallowed air accounts for about 70% of the gas which is present in the intestine. The remaining 30% is present as a result of the diffusion of blood gases into the intestinal lumen and the formation of gas by the digestive processes.

From the above resume of the physiology of intestinal distention, the reason for the inadequacy of the ordinary duodenal tube can be seen. Although the greater portion of swallowed air is sucked back through the tube, as are those secretions which are secreted high in the alimentary tract, collections of gas and fluids lower in the intestine cannot be aspirated, due to the high position of the duodenal tube.

In 1934 Miller and Abbott<sup>6</sup> described a double lumen tube with which they were able to intubate the entire small intestine. One lumen was attached to a balloon which could be inflated; the other lumen was perforated so that by suction through the tube the intestinal contents were aspirated. Abbott and Johnson reported the use of his tube in 1938<sup>7</sup> as an adjunct in the diagnosis and treatment in 16 cases of intestinal obstruction. In all but 3 cases the procedure was successful, and these 3 were in extremis. The action of the tube is explained as follows:

"As the gas and fluid are sucked out of the gut, the intestinal walls contract and, regaining their normal propulsive movement, they force the balloon ahead. The suction likewise collapses the intestine loop by loop, as the tube advances until the obstruction is reached."

Wise<sup>8</sup> reported 3 cases in which the Miller-Abbott tube was used, demonstrating different conditions where it had its use, namely: in (1) paralytic ileus; (2) intestinal obstruction (without strangulation); (3) as an aid in the diagnosis and location of an obstructive lesion in the small intestine.

The advantages of the tube in the treatment of intestinal obstruction were presented by Johnson et al.<sup>9</sup> These were:

"(1) it carries the patient past the period when operation is most dangerous; (2) it prepares the patient for operation by control of the distention; (3) it affords a means of localizing the site of the obstruction and frequently indicates its nature; (4) it permits oral feeding when fluids and foods are so important . . . ; (5) it releases the tension above the site of the obstruction and frequently reestablishes the normal passage of intestinal contents . . . ; (6) in the treatment of paralytic ileus this is the only method which can uniformly be depended on to relieve the distention of the small bowel, which is not uncommonly fatal."

The diet which may be assimilated with the tube in place has been outlined,<sup>10, 11</sup> and consists mainly of liquids and easily digested soft foods.

The contraindications to the employment of the Miller-Abbott tube are the same as those stressed by Wangenstein in his description of conservative decompression in 1932. The two absolute contraindications are: (1) strangulating types of obstruction, and (2) obstruction of the large bowel. The tube often traverses the entire alimentary tract,

but it cannot be depended upon to accomplish this before perforation occurs. (See Case 2.)

It is obvious from the above that the Miller-Abbott tube has definite advantages which are not offered by the ordinary duodenal tube. Wangenstein<sup>12</sup> states:

"Its (duodenal tube) progression beyond the pyloric sphincter is slow as contrasted with the balloon type of tube."

The Miller-Abbott tube is often difficult to introduce and requires patience and constant attention until the tube has reached its destination. The tip is well lubricated and passed through the nose into the stomach. The patient is then instructed to lie on his right side and enough tube is inserted to allow the distal end to enter the duodenum. A presumptive test to show that the tube has reached the duodenum is done by distending the balloon with air, and the rhythmic contractions of the duodenum can be sensed through the plunger of the syringe as a result of back pressure. The absolute test is an x-ray picture verifying the tube's position. When it is certain that the tube is located in the duodenum, the balloon is inflated and the tube is carried down the intestinal tract by peristalsis. Portions of the tube are "fed" through the nose at regular intervals in order to aid the tube in its descent. Suction is applied to the other lumen and maintained constantly except at intervals of about every hour, when the tube is irrigated with water.

#### CASE REPORTS

Four cases are here reported which demonstrate the use and advantages offered by the Miller-Abbott tube.

**Case 1.** A white female, aged 47, entered the hospital on April 12, 1939, complaining of abdominal cramping, vomiting, obstipation and abdominal distention. In 1927 this patient had been operated upon for "gall bladder trouble," but the operative procedure was not known. A ventral hernia developed in the line of incision, which was operated the same year, but recurred. In 1931 the patient developed an intestinal obstruction which necessitated a bowel resection. The patient was a diabetic, and except for this condition had apparently been in good health from 1931 until February, 1939. At this time she was admitted to the hospital with a diagnosis of intestinal obstruction and diabetes mellitus. The obstruction relieved itself on conservative treatment, and the patient was released from the hospital. On a soft diet and mineral oil the patient did well with no obstructive symptoms until April 8, 1939. At this time she administered to herself several ounces of castor oil. She stated that she was not constipated but needed a "toning up." Several hours after this self-medication she began to have abdominal cramping. The following day she began vomiting, and although she had had a large defecation following an enema her abdomen was becoming distended. These symptoms progressed until she was admitted to the hospital. The pertinent findings on admission were as follows: The skin was dry and inelastic, showing dehydration; the abdomen was distended with generalized tenderness and increased borborygmus. The blood count was 3,690,000 red blood cells and 17,200 white cells. The urine contained albumin 1 plus, sugar 4 plus, acetone and diacetic acid 4 plus, and there were 100 pus cells per field. Wangenstein suction syphonage was begun with intravenous fluids, glucose and insulin. After 48 hours of continuous nasal suction



using the ordinary duodenal tube, the patient's general condition improved but her abdomen remained distended. Due to the patient's diabetes and the fact that the obstruction appeared to be mechanical in type rather than strangulating, it was deemed advisable to postpone surgery until the patient's condition had improved. On April 14 a Miller-Abbott tube was inserted. Its course was checked by x-rays (see Fig. 1) until the obstruction was reached. April 16 the abdomen was flat, and April 17 a regular liquid diet was taken and continued until the day of her surgery. On April

18 the balloon was deflated. During this period the patient vomited several times but retained the greater portion of the fluids taken. By April 19 the patient's condition permitted surgery, and under spinal anesthesia the abdomen was explored. The small intestine, which had been quite distended 4 days previously, was now contracted with good tone. The site of the obstruction was found in the ileum, where the bowel had kinked upon itself. On palpation it was found that the tube had passed this point, and its tip lay in the transverse colon. Passage of the tube past the obstruc-



Fig. I. (A) Miller-Abbott tube the day after it had been started lying in the jejunum. After forty-eight hours of continuous nasal suction with the ordinary duodenal tube the intestinal distention is still obvious.



(B) Two days after the Miller-Abbott tube was inserted. Note the diminution of the distention. At this time the patient was taking fluids orally and was much improved.



(C) The site of the obstruction located in the terminal ileum by the injection of barium through the tube. Films taken eight hours following this showed that the barium had not progressed beyond this point. The next day at operation the intestine was found kinked upon itself in this area. The tube had relieved the obstruction to the extent that it had passed through the ileum and its tip was found in the transverse colon.



Fig. II. (A) X-ray showing intestinal ileus with severe distention. The usual duodenal tube had been used with Wangenstein syphonage for two days before this picture was taken. The Miller-Abbott tube is just being introduced.



(B) X-ray three days after the tube was started. Note the absence of gas in the small intestine. Gas still remains in the large bowel and was released by opening the external loop of colon.

tion can be explained by the fact that the suction had relieved the obstruction, and deflating the balloon had allowed the tube to pass beyond this point. Following surgery the Miller-Abbott tube was pulled back until the tip lay in the small intestine, and the patient was allowed to take water orally. The tube was completely withdrawn on April 21, and the patient had an uneventful convalescence.

*Case 2.* A white female, aged 56, was admitted to the hospital on June 3, 1939, where a diagnosis of carcinoma of the stomach was made. Physical examination showed a palpable mass in the epigastrium, in which peristaltic waves could be observed. The abdomen was distended and a constriction of the lower colon could be palpated digitally about 4 cm. above the anal outlet. The patient was prepared for surgery by intravenous



fluids and transfusions, and Wangensteen nasal syphonage was started on June 5, to relieve her increasing tympanitis. On June 9 an exploratory operation was done, and it was found that the entire greater curvature of the stomach was involved by the neoplasm. The peritoneum and mesocolon were studded with malignant-appearing nodules, and a biopsy of one of these tumors showed a grade IV adenocarcinoma. Satisfactory exploration of the lower end of the colon was not done, due to the patient's condition, which became poor shortly after the abdomen had been opened. The colon was quite distended, and the first stage of a colostomy was performed and the abdomen closed. The Wangensteen suction was continued following surgery, but in spite of this the patient developed an ileus. By June 11 the abdomen had become so tense that the overlying skin was blanched, and it seemed that the line of incision would burst. On this date a Miller-Abbott tube was inserted (Fig. 2). By the following day the patient was greatly relieved, the tympanitis had diminished, and bowel sounds could be heard. Some distention remained until June 14, when the loop of the colon protruding through the colostomy site was

tube on July 6. By the next day the patient was greatly relieved and was allowed to drink water freely. On the evening of July 8 the patient passed a small amount of gas rectally, and on the night of July 9 had 5 liquid stools. This was her first defecation in 6 days. The next day the patient was placed on a soft diet, and the tube was removed on July 11. Thus far the patient had had no recurrence of the obstruction.

*Case 4.* A Mexican female, aged 21, entered the hospital on July 3, 1939, complaining of vomiting, abdominal pain and distention. These symptoms had had their onset June 30, 1939, and the patient admitted taking castor oil and milk of magnesia daily since the onset of her illness. A diagnosis of appendicitis with peritonitis was made and as soon as the patient's dehydration was relieved an appendectomy was done. The diagnosis was confirmed at operation. Wangensteen suction with a Levine tube was started postoperatively, but no relief from her tympanitis was observed. July 6 a Miller-Abbott tube was inserted into the stomach, but could not be directed through the pyloric sphincter in a period of 24 hours. X-rays of the



Fig. III. (A) Miller-Abbott tube entering the duodenum in case of intestinal obstruction. Distention is present after forty-eight hours of continuous nasal suction with the ordinary duodenal tube. The balloon was inflated soon after this picture was taken. Remains of barium enema demonstrate that the obstruction is confined to small bowel.



(B) X-ray three hours after the balloon had been inflated. This picture was taken to be certain that the tube was progressing down the intestinal tract.



(C) Flat plate of abdomen three days after the Miller-Abbott tube has been started. Note lack of distention. Patient defecated five times on this date, the first fecal material she had passed in six days.

divided by cautery. At the time the colon was opened there was a gush of gas, offering good evidence that although the Miller-Abbott tube had relieved the tympanitis of the small intestine it had not aided the distention in the large bowel. The tube had not passed through the ileo-cecal valve in 72 hours, and was removed June 14. The patient's abdomen remained flat until June 29, when she again developed an ileus, 3 days before her death. The Miller-Abbott tube was reinserted, relieving the distention and allowing the patient to be comfortable until the time of her death on July 2, 1939.

*Case 3.* A white female, aged 37, entered the hospital on July 4, 1939, for the treatment of intestinal obstruction. The patient had had two laparotomies (appendectomy and salpingectomy), the last operation being in 1923. The abdomen was greatly distended (Fig. 3), and the obstruction appeared to be mechanical in type. Nasal suction with the ordinary duodenal tube was begun the day of admission. Following this, the patient's vomiting ceased, but the abdominal cramping and distention remained unchanged. A Miller-Abbott tube was substituted for the Levine (duodenal)

abdomen showed the tube to be coiling in the stomach. This was thought to be due to the softness of the tube, which had been used considerably on other patients. A new Miller-Abbott tube was ordered and a Levine tube was reinserted until it could be procured. By this time the patient's condition was very poor and the ileus had progressed even though constant nasal syphonage had been used. A new Miller-Abbott tube was started on July 8, and an x-ray taken 1 hour after the tube's insertion showed the tip to lie in the duodenum. The balloon was inflated, and 8 hours later x-ray of the abdomen showed the tip to be at the junction of the duodenum and jejunum. In 20 hours (July 9) the abdomen was softer, a few weak bowel sounds could be heard, and x-rays revealed the tube to have reached the proximal portion of the ileum. The patient's condition, which had been critical, improved, and her respirations, which had been embarrassed due to the distention, became less labored and dropped from 36 per minute to 24 per minute. Flatus and a liquid stool resulted following an enema on July 10, and on July 11 a low residue diet was well tolerated. The Miller-Abbott tube was removed on July 13, at which time

the abdomen was soft and the patient was making a good recovery.

#### COMMENT

Four cases are presented in which the ordinary duodenal tube failed to decompress a distended abdomen in a period of 48 hours or more. Two of these cases were mechanical obstructions and 2 were ileus of the small bowel. These cases were all relieved by the use of a Miller-Abbott tube.

In the first case we feel that the Miller-Abbott tube played an important part in saving the patient's life. She entered the hospital dehydrated, with marked abdominal distention as a result of an obstructed intestine and had an uncontrolled diabetes. After 48 hours of continuous nasal suction using an ordinary duodenal tube the distention was not relieved. A Miller-Abbott tube was then introduced, and after it had progressed into the small intestine the abdomen became flat. At the same time the patient was aiding in maintaining her fluid intake orally. After 4 days she improved to the point where the obstruction could be directly attacked. The site of the obstruction was definitely located by the tube, which is an advantage to the surgeon operating these cases.

Case 2 shows the Miller-Abbott tube's advantage over the Levine nasal tube in cases of intestinal ileus. It also demonstrates that the tube does not transverse the intestinal tract rapidly enough to be of dependable value in the cases of obstruction of the large bowel and is contraindicated in these patients.

In Case 3 the Miller-Abbott tube saved the patient an enterostomy, as she had improved but little with 48 hours of nasal syphonage with a Levine tube. Case 4 demonstrates the value of the Miller-Abbott tube in obstinate cases of ileus with peritonitis.

Two cases have been encountered in which we found it impossible to direct the tube through the stomach into the duodenum. Since suction was constantly maintained through tube it was acting as efficiently as a Levine tube in deflating the upper portion of the alimentary tract. It has been suggested that a steel magnet may be of aid in

directing the tip of the tube through the pylorus. We had not had the opportunity of giving this method a trial.

We do not believe this new tube will replace the Levine tube, as there are certain indications where the latter has its advantages. In most postoperative cases it is more feasible to use this shorter tube for the prevention of postoperative ileus and to protect suture lines. Vomiting in most diseases can be controlled by the Levine tube. As shown above, however, the Miller-Abbott tube does have certain indications for its use, and its advantages in these cases should be realized.

#### SUMMARY

The Miller-Abbott tube is a valuable addition to the surgeon's armamentarium, and when the indications for its use are present should be used in preference to the ordinary duodenal tube.

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## Subserous Cholecystectomy with Cystic Duct Drainage and Lipiodol Injection of the Common and Hepatic Ducts

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MY OBJECT in reading this paper is to further familiarize procedures that I feel have great merit in that they offer a lower mortality rate, and offer a greater protection to the patient and a much easier and more comfortable convalescence at the same time.

Subserous cholecystectomy is not a new procedure, as Sweek has been doing this operation for some 14 years. It was first described by Doyen<sup>1</sup> in France. It was also described by Sweek<sup>2</sup> in 1926,

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but for some unknown reason it has never reached the popularity in this country that it so richly deserves. For some it perhaps appears a longer and more technical procedure, for others it might seem to offer too many difficulties for the good derived. But, I assure you neither of these reasons, in my mind, is too great an obstacle when we consider the welfare and safety of the patient first.

In some cases the technique is difficult, but so are some cases done by the old classical method, and there is also an occasional case, where the gall bladder presents a greatly thickened wall, perhaps



full of stones, and of long standing with the cystic duct completely obliterated, where it is impossible to carry out this type of operation. This type of case is the only contraindication for this operation, and this simply because it is impossible to do a subserous dissection and impossible to get drainage from the cystic duct, as you cannot get a rubber tube into the duct.

In describing the technique a thought comes to me that we might save ourselves some trouble if before commencing the operation we would first look at the x-rays of this patient and locate the exact position of the gall bladder, and we can thus make our incision accordingly, either high or low. I, personally, nearly always use the oblique incision running parallel to the costal margin, making it as nearly directly over the gall bladder as possible. This incision makes for much better visualization, and also, perhaps of much more importance, practically forestalls any likelihood of post-operative hernia. For this reason, even when the appendix is to come out, I make a low right rectus incision for it, for I feel that the added time consumed is not nearly as important as the ease of the operation through this incision and the insurance against a post-operative hernia. And last but not least, the much less likelihood of traumatization.

#### TECHNIC

The subserous dissection is done by grasping the fundus of the gall bladder with either a sponge forcep or a triangular allis forcep, and injecting the serous coat between the lower edge of the liver and gall bladder with 1% novacaine solution. When the operation is done under local infiltration anesthesia this step is very important, as it prevents any uncomfortable sensation felt by the patient and helps him to relax better. It also greatly facilitates the dissection of the peritoneum from the gall bladder wall, and for this reason it is done by me in all local and general anesthesia patients. When this injection is done, an incision is then made in the peritoneum around the fundus of the gall bladder, and the dissection is started to loosen the gall bladder proper from its peritoneal covering. Triangular allis clamps or pile clamps are used to hold the proximal edges of the peritoneal cuff away from the gall bladder wall and to enable better visibility and to aid in the dissection. These clamps being distributed around the cuff about every inch or inch and a half. Both blunt and sharp dissection are used, placing an open gauze sponge on the finger during the first part of the peeling out, or dissection, and small sponges on sponge forceps as it is carried down deep towards the ampulla of the cystic duct. The sharp dissection is used only when tough bands of fibrous tissue will not reflect back from the wall. However, in this procedure we must exercise great care in not breaking into the gall bladder, but this is sometimes unavoidable as the wall may be very thin and friable. However, if it does, it need not cause any great concern, as the operation can be continued after clamping a sponge forcep over this

ruptured area, and the bile spilled is spilled into the peritoneal cuff, and if carefully handled will not get into the abdomen to contaminate it in case the bile is not sterile. In fact, this one point I might stress as an added advantage over the old classical operation, as you are working in a closed field carefully walled off by the peritoneal cuff.

I commonly inject novacaine a number of times during the dissection, as it so greatly facilitates the dissecting. Some of you, perhaps, raise the question of bleeding during this procedure, but in most cases there is practically no bleeding as the small terminal vessels start peeling off with the peritoneum and are no source of worry. Occasionally, however, a larger vessel breaks through and can easily be clamped off and dissected along with the cuff. If bleeding occurs down deep in the cuff it can be easily packed down with small gall bladder sponges for a short time, and then quickly located and treated in the same manner or tied off. When the dissection is carried down to the beginning of the cystic duct, the duct is then grasped with a right-angle gall-bladder forcep and the duct dissected out a little way to facilitate the tying in the duct of the drainage tube. Another right-angle clamp is then placed distal to the first and the gall bladder removed by cutting between the clamps. The first clamp is then removed and replaced at one edge of the duct, and another at the opposite edge; thus we can easily open the lumen of the duct, and, after palpating same for stones, we insert a flexible finger probe to break up any adhesions or narrow margins in the lumen of the duct. It can readily be seen that the palpation is important, as we might push a stone down into the common duct, when it can be avoided. We very commonly run into cases where gall bladder and cystic ducts are full of small stones, and in these cases where any stones are present we always milk them back into the gall bladder before we apply the right-angle clamps on the cystic duct.

There are times when the gall bladder is so tightly distended with bile or bile and stones that before we can start the dissection we have to remove some of its contents through a large needle and syringe to prevent rupturing it. This is done at the fundus and then applying the sponge or allis clamps as described before prevents any leaking.

When the cystic duct is opened up a suitable size, new rubber catheter, usually size 14 to 16, is cut off at the end and inserted into the duct down close to the common duct; it is then tied in place with a No. 1 or No. 0 chromic catgut by placing around the cystic duct and rubber tubes. When this is completed a syringe of saline is forced through gently to test for any leaks. If none is found then all of the instruments are removed from the field and the cystic, common and hepatic ducts are injected with lipiodol through the catheter. The catheter is then clamped off and a sterile sheet thrown over the operative area and an x-ray taken of the injected area. The x-ray film

is placed under the mattress padding previous to the preparation and draping of the patient for the operation. Precaution should be taken that there be no delay in the taking of the x-ray, as the lipiodol will spread out too much and give a poor picture. The film is quickly developed and returned to the operating room for us to see. All of this does not consume over 6 or 7 minutes delay and is worth everything to the patient and the doctor. This technic properly done can completely assure the doctor that there are, or are not, stones in the hepatic or common ducts, thus assuring the patient of relief by removing any stones found at this time. And it prevents the patient from having to come back with no relief of symptoms, and then by long and tedious work finally discovering a stone present which had been overlooked at the previous operation, and having to be told another operation is necessary for the removal of a stone which unfortunately had been overlooked at the previous operation—to say nothing of the hazards and difficulties of a second, and now, unnecessary operation. Thanks must be expressed for this new method, which, to me, is one of the greatest advances in gall bladder surgery that has been made in many years.

When this last step has been completed, the peritoneal cuff, which is left around the cystic duct, is then purse-stringed around the catheter and the excess tissue dissected off. If an oblique incision has been made the tube is brought out at the lateral margin of the wound, as closure is done after first tying the distal end of the catheter to the loose end of the same piece of catgut which was used in making the purse string on the cuff. This is important as a safety factor in preventing removal or accidental dislodgment of the catheter by the patient or a careless nurse. If traction or pulling takes place on it, then the stress is on the catgut and the peritoneal cuff and not on the tube or cystic duct. As a precautionary measure I sometimes anchor the tube to the abdominal fascia also. In cases where the right midrectus incision is made, I always bring the drainage tube out through a stab wound in the side. This prevents any kinking of the tube and also prevents any weakening of the incision by the presence of a drainage tube.

The average case shows a flow of bile coming out of the tube before the incision is closed. When the patient is brought back to his room the catheter is hooked up to a bottle tied to the side of the bed.

Sweek, Hartgraves and Williams<sup>3</sup> were the first to describe this lipiodol injection technique. Their first work was done on dogs, then later applied in human gall bladder surgery.

Waltham M. Walters<sup>4</sup> advocates routine common duct exploration in all gall bladder operations where there is a history of chills and fever. He institutes drainage of the common duct post operatively with lipiodol injections of the common duct routinely post operatively. The reason that he advocates contract media injections into the common duct with cholangiography is to determine when to remove the tube drainage. In this article he mentions five or six others who have advocated cholangiography by injection of the common duct with contract media by means of a needle introduced into the common duct. None of these have ever been very successful. He does not mention any of the work of Sweek, et al. which has been published previously.

A very interesting feature in the convalescence is to notice the change in the character of the bile as convalescence progresses. At first the bile is thick looking and dark in character, and within a week the bile has assumed a much healthier color and appearance, being thinner and more golden brown.

#### COMMENT

In any operation on the gall bladder or ducts, a spasm of the sphincter of Oddi is always caused, with a consequent back pressure on the ducts and liver, causing pain and discomfort. Where we have a tube in the cystic duct draining off the bile, this back pressure cannot take place. Generally in 5 or 6 days we notice a decrease in the amount of bile draining out. This is accounted for by the fact that the spasm of the ampulla and the sphincter of Oddi is decreasing or has stopped, thus permitting the bile to resume its easiest and most natural course.

Even in cases where obstruction of the common or hepatic ducts is found, and the patient's condition will not permit further operative procedure, this cholangiography has given us the location of the obstruction, and this information permits us to treat the patient more intelligently, and then just as soon as conditions warrant we can return and remove the obstruction; whereas before, the patient died without relief, or after long, tedious and expensive trials and proceedings the trouble was finally located and relived with much more pain and suffering and danger to the patient.

Sweek, Williams and myself have now collected some 350 cases done by this method, with only 1 death. This record, I believe, is certainly proof that the procedure has great merit, and at this time I think it might be well to stress the value of local infiltration anesthesia. Some of you, perhaps, will raise the question, "Why not simply tie the tube in the cystic duct with the old classical operation, then do the cholangiography without doing the subserous dissection," and to this I would reply that due to the shortness of the cystic duct and the proximity of the cystic artery it is very difficult to perform this feat, keep the tube in place and keep control of the cystic artery, and not traumatize the common or hepatic ducts. Whereas, with the subserous dissection, none of this trouble is encountered if the technic is carried out properly.

Then, to sum up and with the hope that this paper will in some small measure help to popularize this great advancement in gall bladder surgery: Note the lack of traumatization of the liver and common and hepatic ducts; the absence of post-operative hemorrhage; the flushing out and draining of the bile ducts; extremely low mortality; the great ease and rapidity of convalescence, and last, but not least, the knowledge of unseen and unpalpable stones and obstructions brought to light by the cholangiograms and our consequent ability to handle them according to the conditions present with relief to the patient, content-



ment, rest and bliss for the tired surgeons during the post-operative days and nights to follow.

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## Diagnosis and Management of Acute Intestinal Obstruction (Clinical Study of 100 Consecutive Cases)

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**D**ESPITE our present day methods, intestinal obstruction remains the most deadly of all intestinal conditions and it causes about the same mortality that it has caused for almost three decades. Even 50 years ago, when abdominal surgery was in its infancy, Reginald Fitz and Nicholas Senn, who summarized the best medical opinion on the subject of acute bowel occlusion of that day, reported a mortality of 69%. Current reports on the mortality of acute intestinal obstruction give figures ranging from 19% to as high as 61% Senn found the results of immediate surgical treatment to be practically identical with those obtained by more conservative methods.

Today the question of the apparently more radical surgical treatment of obstruction versus the so-called conservative method of treatment remains unsettled. Men who have had wide experience and great interest in the field have, in recent years, made important strides along the line of conservative treatment. To Wangenstein in particular credit is due for introducing intraduodenal suction through a nasal catheter as a means of decompression in cases of bowel obstruction. It is true that many of the cases treated by this method are relieved without resort to surgery. It is, furthermore, possible that the attachment of an inflated balloon to the end of the nasal catheter, as advocated by Abbott and his co-workers, will increase the number of cases which may be treated by this method. On the other hand, one must take into consideration the available data which indicate that if all cases of simple obstruction are operated on within the first 5 or 6 hours after the onset of symptoms, a mortality rate of only 5% obtains; whereas, if these cases are permitted to go on to strangulation, the mortality will approach 100% after 48 hours have elapsed without surgical intervention. Strangulation is said to occur in 10 to 15% of cases of intestinal obstruction.

Is the diagnosis of strangulation in the hands of general surgeons, on the whole, accurate enough to warrant a blanket rule of giving all cases of simple obstruction a trial of conservative treatment? Furthermore, how accurate is the diagnosis of acute intestinal obstruction? It is obvious that regardless of the method of treatment one subscribes to, early accurate diagnosis is essential if the regrettable percentage of fatalities resulting

from intestinal obstruction is to be reduced. How often, then, is the diagnosis of intestinal obstruction missed, and, when missed, why?

With these questions in mind, I have made an effort to study in detail 100 of the most recent available case histories at the Los Angeles County Hospital and summarize some of the more pertinent observations.

#### STUDY OF CASES

The series of 100 cases reviewed included 78 acute small bowel obstructions and 22 acute occlusions of the large bowel. Of the latter, 5 involved the right half of the colon, and 17 the left half, including the rectum.

The most common lesion of the large bowel was, of course, carcinoma, which was present in 17 cases. The other 5 cases included 2 obstructions due to adhesive bands, 1 to volvulus, 1 to strangulated hernia and 1 was a stricture following a radiation proctitis.

Post-operative adhesions constituted the major portion of obstructive lesions of the small bowel, although the group included as causative factors, hernia, ileus due to inflammatory lesions, fibrous bands producing obstruction in subsiding pelvic disease, mesenteric thrombosis, regional ileitis, volvulus, intussusception and gall stones.

The diagnosis was missed 16 times out of the total 100 cases, making the accuracy of diagnosis 84%. All of the 16 diagnostic errors were in the group of 78 small bowel obstructions which constituted a diagnostic accuracy of 70.5%. There were no diagnoses missed in the large bowel group of 22 cases. The type of obstructive lesion, however, was usually not mentioned in the tentative diagnosis.

The histories were carefully studied in an attempt to ascertain why the errors in diagnosis, which occurred in 16 cases of the small bowel group, were made.

As a result of this study, it seems evident that an accurate diagnosis might have been made in 13 out of the 16 cases had certain diagnostic factors not been overlooked or disregarded.

A history of intermittent cramping pain was noted and apparently disregarded in 9 (56%) of the cases in which the diagnosis was missed. No x-ray flat plates of the abdomen were taken in 8 cases. A positive x-ray diagnosis was either overlooked or disregarded in 8 cases. The opinion was expressed that the patient was not obstructed

in 3 cases because of one or more bowel movements following enemata. Hypodermic injections of morphine were responsible for the masking of symptoms in 3 cases. The x-ray flat plate was negative in 1 case. In connection with this, it should be mentioned that roentgenologic diagnosis of obstruction was positive in 74% of the cases studied. Furthermore, the diagnostic accuracy of the x-ray was greater in the large bowel group of acute obstructions.

In 3 cases, symptoms of obstruction were present but were obscured by the presence of other pathology. One case was thought to be a lobar pneumonia with ileus, and was found at necropsy to be tuberculous pleurisy with effusion and a mechanical obstruction due to adhesions. In the others, the diagnosis was not made because of associated appendicitis and pelvic inflammatory disease.

In 3 cases only were there no diagnostic features that could be ascertained by reviewing the case histories.

Studies of the death rate revealed 40 deaths (40% mortality) in the group of 100 cases. There were 24 deaths (30.7% mortality) in the 78 small bowel cases and 16 fatalities (72.7% mortality) out of the 22 acute obstructions of the large bowel. The majority of the latter were far advanced carcinomas.

In the small bowel group of 16 cases in which the diagnosis was missed, 7 deaths (43.7% mortality) occurred. Six of the 7 deaths occurred in cases which were not operated on, and 1 occurred in the remaining 11 cases which were operated on for other surgical conditions which were thought to exist.

Seventeen deaths (27.4% mortality) occurred in

the 62 cases in which an accurate diagnosis of acute small bowel obstruction was made.

An attempt was made to obtain data which might correlate the type of therapy employed with the mortality rate. The treatment used fell into 3 groups.

1. Those treated by conservative methods only; namely, suction and parenteral fluids including sodium chloride.
2. Those who received similar conservative treatment and were later operated on.
3. Those who were operated on immediately with or without preliminary duodenal drainage and intravenous saline just before or during surgery.

The conservatively treated group comprised 18 cases of small bowel obstruction. Ten of these died (55% mortality) from gangrene with its attendant complications and 5 from ileus. Three cases had undergone previous multiple operations for obstructions. These were included in the 8 cases who survived. Four cases of obstruction of the large intestines were treated conservatively and all died. All were carcinomas.

Taking the 100 cases as a whole, there were 14 deaths (60% mortality) out of the 22 cases treated conservatively.

Combined conservative with subsequent surgical treatment was instituted in 25 cases of obstruction of the small bowel and in 12 cases of the large bowel obstructions. There were 7 deaths (28% mortality) in the small bowel cases, 3 of which were from gangrene and 3 from ileus. Eight deaths (66.3% mortality), 1 of which was due to gangrene, occurred in the 12 cases of the large bowel group.

Considering the conservative and combined conservative type of therapy as a whole, there were 8

TABLE I

ACCURACY OF DIAGNOSIS  
REVIEW OF 100 CONSECUTIVE CASES OF INTESTINAL OBSTRUCTION AT THE LOS ANGELES COUNTY HOSPITAL

No. of Cases	Times Diagnosis Missed	Why Missed	Deaths in Missed Cases	Deaths Diagnosed Cases	Total Deaths
SMALL BOWEL (78 cases)	16 (20.5%)	Presence of Colic Disregarded ..... 9 (56.3—%)	(16)	(62)	24 (30.7%)
		No. X-ray Taken ..... 9 (56.3—%)			
		X-ray Disregarded ..... 8 (50%)			
		Had Bowel Movement ..... 3 (18.7—%)	7 (43.7%)	17 (27.4%)	
		Hypo Given ..... 3 (18.7—%)			
		Other Factors ..... 3 (18.7—%)			
		No. Diagnostic Features ..... 3 (18.7—%)			
		X-ray Negative ..... 1 (6.3—%)			
LARGE BOWEL Right Half (5 cases)				16 (72.7%)	16 (72.7%)
Left Half (17 cases)					
GROUP AS A WHOLE (100 cases)	16 (16%)		7 (43.7%)	33 (33%)	40 (40%)



TABLE II

REVIEW OF 100 CONSECUTIVE CASES OF INTESTINAL OBSTRUCTION AT THE LOS ANGELES COUNTY HOSPITAL  
CO-RELATION OF TYPE OF THERAPY USED WITH MORTALITY

No. of Cases	Conservative Treatment Alone	Deaths	Combined Conservative and Surgery Later	Deaths	Immediate Surgery with Preoperative Suction and Hydration	Deaths
<b>SMALL BOWEL</b> (78 Cases)	15 3 (Previous Multiple Operations)	55.5% 5 (Gangrene) 5 (Ileus)	25	28% 1 3 (Gangrene) 3 (Ileus)	35	20% 1 (Evisceration) 3 (Gangrene) 3 (Ileus)
	<b>TOTAL 18</b>	<b>TOTAL 10</b>		<b>TOTAL 7</b>		<b>TOTAL 7</b>
<b>LARGE BOWEL</b> Right Half (5 Cases) Left Half (17 Cases)	4	100% 4	12	66.3% 7 1 (Gangrene) <b>TOTAL 8</b>	6	66.3% 4
<b>GROUP AS A WHOLE</b> (100 Cases)	22	60% 4 5 (Gangrene) 5 (Ileus) <b>TOTAL 14</b>	37	40.5% 8 4 (Gangrene) 3 (Ileus) <b>TOTAL 15</b>	41	26.8% 4 1 (Evisceration) 3 (Gangrene) 3 (Ileus) <b>TOTAL 11</b>

deaths, due to gangrene, out of the 43 cases of small bowel obstruction, and 1 death from gangrene out of 16 cases of large bowel obstruction treated by this method.

Blood counts on the patients with gangrene almost invariably showed an elevated total leucocyte count and a high percentage of polymorphonuclear cells.

Immediate surgery was employed in 35 cases of the small bowel lesions and in 6 of the large bowel cases. There were 7 deaths (20% mortality) in the small bowel group. Three had gangrene and 3 ileus. Four of the 6 with large bowel obstruction in this group died (66.3% mortality).

The term immediate surgery in this group does not imply that these cases were all operated on soon after the onset of symptoms. On the other hand, as nearly as could be ascertained from the case histories, only one-third of the case operated on immediately after admission to the hospital had symptoms of less than 1 day or 1 night duration. There were no fatalities from surgery of these early cases except 1 from evisceration. The remainder of the cases of this group were admitted to the hospital from 2 days to 1 month after the onset of symptoms, suggesting varying degrees of obstruction.

Taking into consideration this entire group of 100 cases of acute intestinal obstruction, the mortality rate following conservative treatment was 60%; after conservative treatment combined with surgery at a later time, 40.5%; and with immediate surgery, 26.8%.

#### COMMENT

We recognize the difficulty of evaluating statistics from different institutions when we attempt to interpret the results of a study of this type. This is amply illustrated when we consider that at the Mayo Clinic, where acute complete obstruction of the large intestines is encountered with relative rarity, the mortality rate of surgery of the colon and rectum, in the hands of Dixon and his associated surgical staff, ranges from 4% to 12%.

Whereas, at the Los Angeles County Hospital, 22 practically terminal cases of complete large bowel obstruction occurred in over a series of 100 cases with a death rate of over 70%. Likewise, Barga and his associates, who have done admirable work in the medical management of intestinal lesions, have been in a position to carefully observe and select cases of bowel obstruction suitable for medical and combined medical and surgical treatment. The results are more favorable than those obtained from an institution where neglected, indigent patients constitute a large percentage of admissions.

When we further consider the group of cases included in this report, such factors should be admitted as the possible incidence of poorer risks in the group treated conservatively than in the surgically treated cases and vice versa.

However, if these precautions are kept in mind and we are further reminded that the series of cases we report is relatively small, it seems reasonable that certain deductions may be suggested.

It is of interest and importance to note that in 13 of the 16 cases in which the diagnosis of the intestinal obstruction was missed, an accurate diagnosis apparently could have been made had certain commonly accepted diagnostic criteria not have been overlooked or disregarded. The most important was the occurrence of intermittent cramping abdominal pain. This symptom was noted in over half of the missed cases. The importance of the x-ray flat plate of the abdomen should be stressed when we recall that in one-half of the 16 cases positive findings did not prompt the diagnosis of obstruction. Emphasis should also be placed on the 3 errors which were made because the patients had bowel movements following enemas. It is a fallacy to assume that the passage of stools precludes the diagnosis of obstruction, since, naturally, fecal material may be eliminated by rectum until the bowel is emptied of its content below the point of obstruction. The avoidance of the administration of hypodermics of pain-relieving drugs in cases of obscure abdominal distress merits reiteration since in 3 of the cases in this group obstruction was not diagnosed because of this error.

The importance of accurate diagnosis is borne out by the mortality rate of 43% in the cases where acute small bowel obstruction was not recognized, whereas in the group of correctly diagnosed cases a death rate of only 27% obtained.

It seems that the significance of the fatalities in the large bowel cases should be minimized, since most of these cases were nearly terminal upon admission to the hospital.

In an attempt to correlate the type of therapy employed with the results obtained in the small bowel group, mortality rates of 55%, 28% and 20%, following conservative therapy, combined conservative and surgical treatment, and immediate sur-

gery, respectively, cannot be overlooked. It would appear that more cases should be submitted to immediate surgical intervention, since proportionately almost 3 times as many deaths resulted when a conservative regimen rather than surgery was adopted. This deduction seems further substantiated by the occurrence of 8 deaths from gangrene of the small bowel group in the 43 cases not treated by immediate operation. It is therefore essential that one exerts every effort to recognize gangrene of the bowel and exclude its presence before adopting the conservative measures in the management of any cases of bowel obstruction.

This is, at times, extremely difficult, but this complication will be recognized more often if we remember that hemorrhage and peritonitis, with their attendant symptoms, accompany gangrenous degeneration of the intestine.

The findings of an elevated leucocyte count and a high polymorphonuclear percentage in cases of gangrene is a helpful diagnostic aid. This blood change does not occur in early uncomplicated obstruction.

It is lamentable that the death rate from acute intestinal obstruction has not been appreciably lowered in recent years. However, when we consider that all of the patients in the group reported, who were soon operated on after the onset of symptoms, lived, the outlook appears hopeful. A low mortality following early treatment of bowel obstruction has been reported by other observers also.

It seems, then, that we are confronted with the problem of educating the public to promptly seek medical advice when the cardinal symptom of acute intestinal obstruction exists, namely, intermittent cramping abdominal pain.

9028 Sunset Blvd.

## Incidence of Spirochaetes and Fusiform Bacilli in Throat and Gum Smears

EDWARD L. BREAZEALE, B.S.A.

and

ROBERT A. GREENE, Ph.D.

Tucson, Arizona

"**B**ORRELIA vincenti . . . together with a fusiform bacillus, is found in small numbers in the mouths of most normal adults, particularly around the gingival margins and in the tonsillar crypts. They are very numerous in the pseudo-membranous ulcerative inflammations known as Vincent's angina and Vincent's stomatitis, and may complicate other types of ulceration, such as diphtheria, syphilis or carcinoma" (Stitt<sup>1</sup>)

"Vincent's stomatitis is well known to occur particularly in mouths traumatized by chronic irritants such as tartar or faulty dental restorations, or accompanying nutritional disturbances such as scurvy, or intoxications such as mercurial poisoning. Noma occurs most frequently in children's

institutions, especially following epidemics of exanthematous fevers, or otherwise in undernourished children" (Gay<sup>2</sup>).

Rosenau<sup>3</sup> states, "Campbell and Dyas found a few Vincent's organisms in about 50% of all swabs taken from throats of troops at Bramshott. Reckford and Baker found only one carrier in 50 normal individuals, whereas fusiform bacilli and spirilla were found in 90% of the smears from diseased teeth in a dental clinic."

### PRESENT STUDY

This study was made in order to determine to what extent spirochaetes and fusiform bacilli might be found in throat and gum smears of different groups.

Slides were prepared from material obtained by

\* From the Arizona State Laboratory, Tucson.



swabbing the throat and gums. After fixing with heat, the slides were stained with crystal violet-ammonium oxalate, as used in Hucker's modification of the Gram stain. The slides were examined for the presence of spirochaetes and fusiform bacilli. If no organisms, or a few (an average of less than 1 per microscopic field) were present, the results were recorded as negative; when several organisms were found per field, the results were reported as positive.

- The specimens came from the following groups:
1. School children, chiefly white, from homes of upper social and economic levels. Average age 12 years.
  2. School children, all colored, large percentage from families of low economic levels. Average age 13 years.
  3. Enlisted men, Arizona National Guard, Chiefly white, with small percentage of Mexicans. Average age 20 years.
  4. School children, chiefly Mexican, from families of low social and economic levels. Average age, 11 years.
  5. School children, all Indians, pupils at a boarding school. Average age 13 to 14 years.
  6. College students, girls. Average age 19 years.
  7. College students, boys. Average age 20 years.

TABLE I.  
INCIDENCE OF SPIROCHAETES AND FUSIFORM BACILLI IN THROAT AND GUM SMEARS

Group No.	1		2		3		4		5		6		7		All groups	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Both smears negative	81	81	59	59	94	73	40	40	59	59	68	75	64	64	465	65
Throat smear positive	2	2	10	10	6	5	5	5	3	3	8	9	10	10	44	6
Gum smear positive	9	9	15	15	18	14	31	31	29	29	11	13	14	14	127	18
Both smears positive	8	8	16	16	11	8	24	24	9	9	3	3	12	12	83	11
Totals	100	100	100	100	129	100	100	100	100	100	90	100	100	100	719	100

DISCUSSION

The preceding table shows that 465 (65%) of the group (719) did not harbor spirochaetes and fusiform bacilli at the time the specimens were taken. Thirty-five per cent (254) showed the presence of these organisms in gum or throat smears, or both:

	Number	Percent
Throat smear only	44	6
Gum smear only	127	18
Both smears	83	11
	254	35

The lowest incidence of these organisms occurred in a group of school children from homes of superior social and financial levels; the highest incidence was among a group of Mexican children from homes of low social and economic levels. These organisms were found in 41% of a group of colored school children and Indian children at a boarding school.

Among young adults, the incidence was:

Enlisted men, Arizona National Guard	27%
College students, girls	25%
College students, boys	36%

These results would indicate that among school children and young adults one might expect to find significant numbers of spirochaetes and fusiform bacilli in approximately 35% of the throat and gum smears examined.

University of Arizona

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3. Gay, F. P.: Agents of Disease and Host Resistance; Charles C. Thomas; Springfield, Illinois, 1935.  
3. Rosenau, M. J.: Preventive Medicine and Hygiene; D. Appleton-Century Company; New York, 1935.

"STONE WALLS DO NOT A PRISON MAKE  
NOR IRON BARS A CAGE."

Winter is a jailer who shuts us all in from the fullest vitamin D value of sunlight. The baby becomes virtually a prisoner, in several senses: First of all, meteorologic observations prove that winter sunshine in most sections of the country averages 10 to 50 per cent less than summer sunshine. Secondly, the quality of the available sunshine is inferior due to the shorter distance of the sun from the earth altering the angle of the sun's rays. Again, the hour of the day has an important bearing: At 8:30 A. M. there is an average loss of over 31%, and at 3:30 P. M., over 21%.

Furthermore, at this season, the mother is likely to bundle her baby to keep it warm, shutting out the sun from Baby's skin; and in turning the carriage away from the wind, she may also turn the child's face away from the sun.

Moreover, as Dr. Alfred F. Hess has pointed out, "it has never been determined whether the skin of individuals varies in its content of ergosterol" (synthesized by the sun's rays into vitamin D) "or, again, whether this factor is equally distributed throughout the surface of the body."

While neither Mead's Oleum Percomorphum nor Mead's Cod Liver Oil Fortified With Percomorph Liver Oil constitutes a substitute for sunshine, they do offer an effective, controllable supplement especially important because the only natural food-stuff that contains appreciable quantities of vitamin D is egg-yolk. Unlike winter sunshine, the vitamin D value of Mead's antiricketic products does not vary from day to day or from hour to hour.

# SOUTHWESTERN MEDICINE

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LESLIE M. SMITH, M. D.

At the final meeting of the year 1939 of the El Paso County Medical Society, December 11, Dr. Leslie M. Smith succeeded Dr. James J. Gorman as president of the El Paso County Society. Dr. Smith had served the previous year as president-elect.

The new president was born in Alabama, August 8, 1885. His early schooling and college work were obtained in his native state. He was graduated

from Vanderbilt University in 1917 with the degree of Doctor of Medicine. Upon graduation he was commissioned in the Medical Corps of the United States Navy, serving for the duration of the World War. After leaving the service he became associated with the Buie Clinic of Marlin, Texas, where he practiced for 4 years. In 1924 and 1925 Dr. Smith took graduate training in the specialty of dermatology and syphilology at Columbia University and Stanford University. In 1925 Dr. Smith began the practice of dermatology and syphilology in El Paso. The winter of 1931 was spent in graduate study at the New York Skin and Cancer Hospital.

Dr. Smith is married and has one son. He is a member of the El Paso Rotary Club. Professional memberships are as follows: El Paso County Medical Society, Texas State Medical Association, American Medical Association, Southwestern Medical Association and the Southern Medical Association. Dr. Smith is a Diplomate of the American Board of Dermatology and Syphilology, and is currently president of the Texas Dermatological Society. He is a Fellow of the American Academy of Dermatology and Syphilology and the American College of Physicians.

## LICENSURE OF ALIENS

Of timely interest is a recent decision by the courts of Texas, upholding that portion of the Medical Practice Act prescribing citizenship as a condition precedent to medical licensure.

A test case was brought by an El Paso-Juarez alien against the Texas State Board of Medical Examiners, petitioning the courts to compel the board to admit this individual to examination. The pleadings attacked the validity of the portion of the Medical Practice Act requiring examinees to be citizens. The plaintiff's contention of invalidity was denied, and the act upheld.

A significant portion of the defendant's brief is quoted: "There is no good reason why restraints should not be placed upon the practice of medicine as well as the law. The public are more directly interested in this than in the practice of law; and persons who engage in this profession require a special education qualifying them to practice. A great majority of the public know little of the anatomy of the human system, or of the nature of the ills that human flesh is heir to; and there is no profession, no occupation, or calling, where people may more easily or readily be imposed upon by charlatans. It is almost an every-day experience that people afflicted with disease will purchase and swallow all sorts of nostrums, because some quack has recommended it."

Thus it is now established that in Texas aliens may not be licensed to practice medicine. And once more it is affirmed that the practice of medicine is not a right, but a privilege granted by the State, and therefore subject to restrictions and qualification as desired by the State.



## WISDOM'S FOUNT

The tolerance of fallacies is but intellectual shirking. Wouldn't the practice of medicine be in a fearful mess if it were to be managed by the general public, through their chosen representatives, the politicians? Witness the public tolerance of such rubbish as chiroquacktic! Read this sucker-bait from the columns of the august El Paso Times.<sup>1</sup>

What is a cold?

"Why a 'cold' should be so called is an unsolved mystery," said "Drs." Blank. "Because it is really an inflammation, and one of the characteristic features of inflammation is that excessive heat is present. Then a 'cold' by all rights should really be named 'hot.'"

"An intelligent person considers what it is that produces the inflammation or 'hot,' not only in mucous membranes of nose and throat, but also in other parts of the body.

"Apparently a cold is the result of accumulation of poisonous materials within the body for a period of time preceding the cold. The amount of poisons which accumulate and the rapidity in which it is formed, determines the frequency and severity of colds. If the elimination or excretory organs of the body are functioning normally, these poisons will not be accumulated or held back into the system, and colds will rarely manifest themselves.

"It is apparent then, that in order to get at the real cause of colds the chiropractor must restore the normal transmission of life energy from the brain, over nerves, to the various excretory organs so that they may again perform their function normally. With the restoration of normal function to excretory organs so that wastes and poisons may be eliminated from the body, there will be no need for colds and for the excretion of waste fluids through mucous membranes of nose, throat and bronchial tubes," said "Drs." Blank.

There's no assurance like that of ignorance, is there?

Just one more question, and we'll dismiss class—why in the world aren't newspapers as diligent and careful in checking questionable advertising claims as they are in verifying the contents of their news columns?

1. El Paso Times, January 8, 1940.

## PHYSICIANS IN WAR

No higher duty can be recognized than that of serving one's country when that land is endangered by enemy forces. Such a man as Sir Frederick Banting, of Toronto, has given up his private activities to join the armed services of his country.

Many of the younger physicians of the United States have signified their availability for military service by enrolling in the reserve corps of the Army and the Navy. Too few of the older physicians are holders of reserve commissions. Their guidance and skill may be of vital necessity in case of war. Probably many are hesitant to contemplate possible monetary losses sure to follow should they be called to give up their private practices and answer the first call if war comes.

Somehow, provision must be made, if war comes, to protect the patriot who leaves a good-paying practice to his competitors, and goes into the service of his country. Certainly it is unfair for one

man to give up all he has built in a community, only to have it snapped up by stay-at-home competitors. Some plan must be devised, perhaps similar to the one now in use in England, whereby protection and equality is afforded all.

The English plan requires physicians not in the service of the government to turn over to a central fund all their fees above their average yearly income. From this fund pro-rata divisions are made to the physicians in the armed forces.

Should America's older physicians be assured that some such provision would be made for them in case of their being called to war, no branch of the national defense forces would be henceforth lacking in experienced officer personnel.

## 1940 CENSUS

The Sixteenth Decennial Census to be taken in 1940 will bring up to date the statistical record of the United States, the foundations of which were laid in the first Decennial census taken in 1790. The 1790 Census and all succeeding censuses were provided for in the Constitution. The practical reason for the first census was the determination of representation in Congress.

The first census in 1790 showed a total population—in 17 states—of 3,929,214. At that time Virginia was the most populous state with 747,610. Pennsylvania was second, with 434,373; North Carolina third, with 393,751; Massachusetts fourth, with 378,787; New York 340,120 and Maryland 319,728. The entire population of the United States at that time was only a little larger than the population of Chicago today. The entire population of New York State was about equal to today's population of Rochester alone.

The most vital indicator of the future of America is the birth and death record of the Census Bureau. The birth rate which in 1915 exceeded 25 babies per 1,000 population has dropped to 17. Despite a great increase in total population during that time the actual baby crop dropped from over 2,621,000 in 1921 to 2,203,000 in 1937. In the eight years from 1921 to 1928 inclusive, 2,200,000 more babies were born than in the subsequent eight years, ending with 1936.

And to gauge the future of the nation it is important to know where births and deaths are taking place. The states which have a birth rate in excess of 20 are New Mexico, Alabama, Arizona, Georgia, Idaho, Louisiana, Mississippi, North Carolina, South Carolina, Utah, and West Virginia. The states which have a birth rate of less than 15 are Connecticut, Illinois, Massachusetts, Missouri, New Jersey, and New York.

The advance of medical science in the conservation of life has been tremendous. Census death records show that the great human enemies, such as tuberculosis, typhoid, smallpox, measles, scarlet fever, diphtheria, influenza and pneumonia, erysipelas, malaria, bronchitis, diarrhea and enteritis,

(Continued on page 31)



## *Special Section*

# Arizona State Medical Association

PRESTON T. BROWN, M. D., *Associate Editor*  
403 Professional Bldg., Phoenix, Arizona

### COUNTY MEDICAL SOCIETY ELECTIONS

The following county medical societies report election of officers for 1940 to be:

#### COCHISE COUNTY MEDICAL SOCIETY

President—Dr. C. H. Hunt, Bisbee  
Vice-Pres.—Dr. H. M. Helm, Douglas  
Sec.-Treas.—Dr. Geo. H. Hess, Bisbee

#### GRAHAM COUNTY MEDICAL SOCIETY

President—Dr. F. W. Butler, Safford  
Vice-Pres.—Dr. Henry H. Riklin, Safford  
Sec.-Treas.—Dr. Lyle A. Condell, Safford

#### GREENLEE COUNTY MEDICAL SOCIETY

President—Dr. C. P. Austin, Morenci  
Vice-Pres.—Dr. Karl L. Fife, Duncan  
Sec.-Treas.—Dr. C. H. Laugharn, Clifton

#### SANTA CRUZ COUNTY MEDICAL SOCIETY

President—Dr. Z. B. Noon, Nogales  
Sec.-Treas.—Dr. Chas. S. Smith, Nogales

#### YAVAPAI COUNTY MEDICAL SOCIETY

President—Dr. C. E. Yount, Jr., Prescott  
Vice-Pres.—Dr. E. B. Jolley, Jerome  
Sec.-Treas.—Dr. C. E. Yount, Prescott

THE ARIZONA HOSPITAL ASSOCIATION, nearing its first birthday, is holding its Annual Program at Hotel Adams, Phoenix, on February 2nd and 3rd. A cordial invitation is extended to all physicians to attend any of these meetings. The schedule is as follows:

### PROGRAM OF THE ARIZONA HOSPITAL ASSOCIATION The Adams Hotel

Phoenix, Arizona, February 2-3, 1940

#### *Thursday, February 2*

- 9:00 A. M.—Invocation—Dr. Rollo C. LaPorte, Pastor, First Presbyterian Church, Phoenix, Arizona.
- 9:10-9:45 A. M.—President's Address, "The Arizona Hospital Association, Its Scope and Purpose"—C. G. Salsbury, M. D. Medical Director, Sage Memorial Hospital, Ganado, Arizona.
- 9:45-10:30 A. M.—"Group Hospitalization, Its Plan and How It Works"—Paul Elliott, D. D. Administrator Hollywood Presbyterian Hospital, Hollywood, California.
- 10:30-11:15 A. M.—"Nursing Problems in Small Hospitals"—Charles W. Sechrist, M. D. Administrator Flagstaff Hospital, Inc., Flagstaff, Arizona.

11:15-12:00—"The Importance of Keeping Adequate Records"—Genevieve Hayes, Record Librarian, Pima County Hospital, Tucson, Arizona.

2:00-2:45 P. M.—Round Table—"The Problems of the Small Hospital."

Leaders: H. S. Barnes, President of the Association of Western Hospitals. Paul C. Elliott, Administrator Hollywood Presbyterian Hospital, Hollywood, California.

2:45-3:15 P. M.—"The Industrial Commission and the Hospitals of Arizona." Carl Holmes, Member Arizona Industrial Commission.

3:15-4:00 P. M.—"The Relation of Voluntary Hospitals to the Federal Government's Health Program." H. S. Barnes, President of the Association of Western Hospitals, and Superintendent of the Latter Day Saints Hospital, Salt Lake City, Utah.

4:30 P. M.—Panel Discussion.  
The Hospital Question Box.

7:30 P. M.—The Banquet.  
Introduction of Distinguished Guests.  
Banquet Address—Bishop Walter Mitchell of the Episcopal Church.

#### *Friday, February 3*

- 9:00-9:45 A. M.—"The Development and Management of Hospital Personnel"—J. O. Sexson, Superintendent Good Samaritan Hospital, Phoenix, Arizona.
- 9:45-10:30 A. M.—"The Importance of Spiritual Care for Hospital Patients". Rt. Rev. Monsignor Thomas J. O'Dwyer, General Director, The Catholic Welfare Bureau, Los Angeles, California.
- 10:30-11:15 A. M.—"The Importance to Hospitals of Good Public Relations Education." Roland Davison, M. D., Medical Director The Desert Sanitarium, Tucson, Arizona.
- 11:15-12:00—"Trends in Nursing Education and Requirements". Minnie C. Benson, Secretary Arizona State Board of Nurse Examiners.
- 2:00-2:45 P. M.—"Responsibility of the Hospital for Health Education and First Aid Programs." Dr. Charles A. Thomas,

## *The President's Page*

### MEMBERSHIP

THIS is the season of the year when we are told annual dues to our organization are payable. To the physician this is a privilege rather than an obligation, for, in addition to its being an honor to belong to such a professional organization, the annual dues provide each member:

1. Membership in his county, state and national organizations.
2. Defense for himself and his good name against malpractice suits.
3. The lowest indemnity insurance rates obtainable.
4. Our monthly medical journal, *SOUTHWESTERN MEDICINE*, a high ranking medical publication.
5. An annual scientific meeting with outstanding guest and local speakers.
6. The services of the officers and committees of the Association, who are constantly at work and alert to the best medical, economic, social and political interests of the profession in the present-day struggle for a place in the sun.
7. A full-time Association office, 202 Security Bldg., Phoenix, through which the officers and committees function and their work co-ordinated, and where YOU and YOUR SOCIETY may call for information and aid.
8. Immediate recognition by the various insurance companies, commercial firms, and the general public, that because of such membership a physician is reputable and qualified to serve.
9. Eligibility for entrance to special societies and postgraduate courses—we should say "sole" eligibility, for, without membership, there is no eligibility for entrance.
10. A happy means for social amenities with our confreres, for rubbing elbows and being friends with our professional associates and their families.

Together we march forward in behalf of the public we serve.

In all sincerity,

A handwritten signature in cursive script that reads "Geo. J. Smith M.D.".

PRESIDENT, ARIZONA STATE MEDICAL ASSOCIATION.

Medical Superintendent. Southern Pacific Hospital, Tucson, Arizona.

2:45-3:15 P. M.—"How the Small Hospital Can Best Meet the Needs of the Community". Mrs. H. W. Squibb, Morris Squibb Hospital, Safford, Arizona.

3:15-4:30 P. M.—Business Session.

Reports of Committees and Election of Officers.

### PROFESSIONAL NEWS

Dr. Charles W. Sult, Jr., has located in Phoenix to enter practice with his father, Dr. Charles W. Sult, Sr. Dr. Sult graduated from the Creighton College of Medicine in 1936, spending 1 year in rotating internship at the Los Angeles County General Hospital, followed by 2½ years residency at the same hospital in neurology and psychiatry. In addition to his private practice in neurology and psychiatry, Dr. Sult is serving as a consultant at the Arizona State Hospital in that specialty.

### LOCAL USE OF SULFAPYRIDINE IN THORACIC EMPYEMA

DR. Wm. F. CORMACK

CASE No. 49266:—A negro boy, age 3 years, entered the Hospital on the 24th of June, 1939, with complaints as follows: cough of two weeks' duration, high temperature, rapid respiration for the past few days, painful micturition and anorexia. The symptoms began about two weeks before admission to the Hospital with a severe cough and some nausea and vomiting, loss of appetite and high temperature. Under all sorts of therapy the patient did not seem to recover and the temperature became chronic as did the loss of appetite. Rapid respiration and crying on urination were noted as later developments. The past medical history was negative. The family history and social history were negative.

Examination showed a pale, fairly well developed, well nourished colored male infant without any gross deformities, but in a state of marked malaise. The head and neck examination was essentially negative. The thorax and lungs revealed unequal expansion, dullness with marked coarse moist rales of the lower right base, and limited expansion on the left. The heart rate was rapid, no murmurs, thrills or irregularities noted. There was marked distention of the abdomen, no viscera palpated and no fluid present. G. U. and extremities, negative to examination.

DIAGNOSIS: Pneumonia of the lower right lobe.

X-ray taken on the 26th, (single film), revealed the chest to show complete density on the left side with mottling of the right side. The heart seemed displaced to the right. It was concluded that there was a left pleural effusion with mottled densities on the right, probably bronchopneumonia on the right.

On the 1st of July, under general anesthesia, a small section of the 8th rib was removed in the posterior axillary line and No. 18 catheter was placed, encountering a small amount of pus. Further exploration with a needle did not discover the balance of the pus pocket. The patient returned to the ward in good condition.

On July 3rd, x-ray, single film, showed compres-

sion of the right lung due to displacement of the heart, fluid in the left pleural cavity extending up to the 2nd rib, and tube in place at the level of the 10th rib posteriorly. Diagnosis was left pleural effusion with displacement of the heart to the right and compression of the right lung.

On the 11th, chest plate revealed no fluid level, with the patient being in an upright position. The entire left side of the chest showed a homogeneous density with loss of outlines of the diaphragm. Conclusion made was no fluid level with the patient sitting. The left side showed density indicating pus or fluid.

On the 18th, anteroposterior and lateral views showed the drainage tube in the sulcus posteriorly on the left. The fluid shadow apparently had disappeared. There was some cloudiness and mottling in the lung field probably due to thickened pleura, partial atelectasis or pulmonary inflammation, one or all. On the right side there was some mottling about the hilum but definitely less than was present on the previous examination of July 11th. The conclusion was of draining empyema pocket on the left with some pulmonary inflammation, in the adjacent lung tissue.

On the 20th, thoracotomy was performed under general anesthesia, the scar of the former incision being excised and a one-inch section of the 8th rib removed beside the small gap which still remained from the previous resection. The parietal pleura was opened and the lung stripped away from the chest wall. It was found to be adherent in all directions but was freed so that a free pocket was encountered posteriorly along the rib but no pus was found. On exploration upward to about the level of the 6th rib in the mid scapular line, a free pocket was entered which contained pus, probably 50 to 100 c. c. s. This pus was creamy and thick. Drainage tube was inserted and the wound closed in the usual manner and then the wound irrigated with normal saline.

On September 1st, anteroposterior and lateral views of the chest revealed some density in the lung field of the left base, and diffuse cloudiness probably due to pleura thickening. The shadow did not suggest fluid in the sulcus. There was a definite regression in the pulmonary shadows elsewhere. The conclusion was that of an empyema pocket after removal of the tube.

Urine specimen on admission to the hospital was not remarkable beyond a trace of albumin and a positive sugar. Later examination revealed no albumin but the sugar was still present in the amount of 3/10 per cent. Blood count on admission was 60% hemoglobin, 2,700,000 red blood count, 12,000 leukocytes, 22% lymphs, 2% monos and 76% polys. Count on the 26th of August revealed 60% hemoglobin, 3,500,000 reds, 8,000 leukocytes, of which 48% were lymphs and 52% polys. Sputum examination on June 25th revealed many leukocytes, no acid fast bacilli, but a mixed flora—predominately staphylococci and a few streptococci, but some gram positive diplococci were found. Throat culture was negative for diphtheria. Stomach contents showed no tubercle bacilli, and culture of the empyema drainage on the 20th of July, revealed gram positive diplococci which were morphologically pneumococci. Kahn test was negative. The patient was given one blood transfusion of 200 c. c. of blood on the 22nd of July.

PROGRESS NOTES: On June 26th, the breath sounds were almost absent on the left side, and the heart was pushed to the right. On the 28th, fluid was about the same, perhaps slightly increased. On the 30th, fluid was ready to be removed. On July 5th, drainage tube was removed and no pus was seen. The patient was resting comfort-



ably. The breath sounds on the left side were distant, more audible at the apex than at the base. On the 12th the patient became febrile and the left chest was dull to percussion. On the 20th, pus pocket was found and drainage tube inserted. On the 22nd the patient was transfused and on the 24th patient showed a little improvement since the transfusion. There was purulent drainage from the chest. On the 29th the temperature returned to normal, and the patient was better. Purulent drainage was continuous. On August 5th, the patient's temperature continued to rise a little, and the drainage was slightly decreased. On the 20th of August we began irrigating the cavity with sulfapyridine solution. On the 22nd, the condition was about the same and the cavity was still draining. On the 24th, the child seemed very active and bright. The condition was good. The cavity was probed in the morning and a moderate drainage of purulent material was obtained. The cavity was getting smaller to the probe. The organisms were also decreasing on the daily smears. On the 1st of September, a small amount of purulent drainage from the wound was present but the patient was up and about, eating well and improving daily. On the 4th of September drainage was entirely serous in type and the patient was apparently about recovered. On the 6th, drainage from the chest wound was practically healed and the patient was up and about, playing. Condition excellent. On the 11th the patient went home, apparently cured.

On admission to the Hospital the patient was given sulfapyridine grs.  $2\frac{3}{4}$  every 4 hours. Sputum typing also ordered, also gastric aspiration for tuberculosis. On the 11th, order left to measure the amount of Dakins solution used to fill cavity in order to determine the size of the cavity. On the 20th, irrigation with the following solution was begun,—one tablet of sulfapyridine,  $7\frac{3}{4}$  grains was dissolved in 1,000 c.c. sterile water. The supernatant fluid was used to irrigate well with a little force, using a catheter and bulb syringe. After a thorough washing, the patient was kept lying on the right side for one hour and the cavity left full of the solution. On the 28th, irrigations discontinued. On the 3rd of September, Wangenstein to the thoracic drain was ordered and on the 4th the patient was up and about. On the 11th, patient was discharged.

#### SUMMARY

This case is presented as it seems to indicate that local use of sulfapyridine produced rapid improvement in empyema. The local use of this drug has not been previously reported in this connection, as far as I can ascertain.

### TREATMENT OF PNEUMONIA WITH SULFAPYRIDINE

M. W. MERRILL, M. D.

Phoenix, Arizona

**W**HENEVER a new therapeutic agent comes into general use, it is received in various ways by the Medical Profession. Some accept it cautiously, others rapidly and freely, and still others adopt its use only as repeated clinical and experimental investigations reveal its true value—its possibilities and its limitations.

Thus it has been with Sulfapyridine, a drug which has rapidly assumed a place of major importance in the treatment of Pneumococcic infec-

tions. Since the original work on the effect of 2 (p. aminobenzenesulfamido) pyridine hereafter and popularly known as Sulfapyridine, on pneumococcic infections in mice, reported by Lionel Whitby, of London in May, 1938, a veritable flood of reports on the value of this drug have been published. And as has occasionally happened in the history of new drugs, the vast majority of the reports bear out very well the contentions of the earliest investigators.

In view of the high mortality rate, it has been thought that a brief review of cases treated to date with this drug may add, in small measure, to our knowledge of its use. I also believe, in continuation of the splendid review on the treatment of pneumonias presented before this society a few months ago, that it is of value to further study this common and serious disease.

A brief review of the literature shows a consistency of the reports on the value of the drug. Among the earliest reports were those of Evans and Gaisford of Birmingham, England, who treated 100 unselected cases with a mortality of 8%. In 100 unselected cases in their control group, the mortality was 27%. The standards for dosage laid down by these men are being followed by practically all Doctors using the drug.

In this country Williams and Morgan of Nashville, Tennessee have reported 50 treated cases, with only one death. Seven of these cases had a Bacteremia and six recovered. Hodes, Stifler, and associates have reported on the treatment of pneumococcic infections in 71 children. There were no fatalities in their series. Thirty-three children had primary pneumonias and thirty-eight had pneumonia following measles. The drug was apparently equally efficacious in both types and in practically all cases the children were clinically well in 48 hours. No empyema developed in this series.

Barnett, Hartman, Perley, and Ruhoff also report on the treatment of pneumococcic infections in children. They treated 23 patients, all of whom recovered. They had very little trouble with toxic reactions and advise use of the drug.

Wilson, Spreen, and others treated 70 cases of primary and secondary pneumonias in children. Thirty-five received Sulfapyridine and 35 did not. There was no mortality in either group, but the sulfapyridine cases made a much prompter recovery.

Quite recently Smith and Needles, of Detroit, have reported 50 consecutive cases of lobar pneumonia treated with this drug with a mortality of 8%.

What is perhaps the most extensive and complete report published so far in this country is that of Pepper, Flippin, Schwartz, and Lockwood, of Philadelphia. These men have been collecting clinical data on Sulfapyridine since shortly after it became available in this country. They have published several previous reports, their last being on

400 cases of typed lobar pneumonia. In this series they have a mortality of 7% of all cases.

This mortality and their reports on complications and toxicity of Sulfapyridine, agrees in the main with other widely separated investigations. Every case was definitely established as a pneumonia by clinical and laboratory investigation and every case was typed. X-ray examination was made in 66% of the cases and blood cultures were taken in 94. Patients who died inside of 12 hours after treatment was begun are not included. A few received serum as well as Sulfapyridine and they are also excluded. Careful analysis of the fatal cases showed they were either moribund on admission or had unrelated complications which were factors in producing a fatal result.

In this report today, I am presenting 25 cases of lobar pneumonia. Fourteen of these cases were treated without Sulfapyridine and four died, a mortality of 28.5%. Since April, 1939 I have treated eleven cases of lobar pneumonia with Sulfapyridine with one fatality, a mortality to date of 9.1%. I have excluded from this report any pneumonias not typically primary in type. I have used Sulfapyridine in a few instances in secondary and post-operative pneumonias with no fatalities as yet.

In presenting these cases, certain facts must be made clear. In the first place, these cases have not been treated as objects of experimental research. In the majority of them the economic question has been a vital factor. They have been treated with the view in mind of decreasing morbidity and hospitalization expense to a minimum. Any laboratory work essential to the welfare of the patient has not been left out, but on cases which have responded promptly, x-rays, blood counts, blood cultures, etc., have been kept at a minimum.

The four fatal cases who did not receive Sulfapyridine will be briefly reviewed. The first was a 79 year old male who had a right lobar pneumonia type No. III. He entered the hospital moribund and died within two hours of admission.

Case No. 2 was a male, age 38, who had been acutely ill seven days before admission. He had a type III left lobar pneumonia and his pulmonary condition was complicated by a peptic ulcer. He was given 100,000 units of serum, but not until nine days after the onset of his illness. He received Sulfanilamide also with little effect and expired on the eleventh hospital day. There was no autopsy.

Case No. 3, male, age 49, had a pre-existing chronic nephritis. He was admitted on his seventh day of illness with a type No. I, right lobar pneumonia. No serum was given and he expired four days after admission. No autopsy was obtained.

Fatal case No. 4 was a male, age 55, who was admitted five days after the onset of a right lobar pneumonia type No. I. He was given Sulfanilamide but no serum. His pneumonia was never very extensive nor was he apparently very toxic. On his third hospital day he developed an auricular fibrillation. He expired on the tenth

day after admission and at time of expiration, was thought to be making a nice recovery. No post was obtainable.

The lone mortality in the Sulfapyridine series was a white male age 47. He had been ill for two weeks before admission and on initial examination was found to have an extensive bilateral basal pneumonia, lobar type and fluid in the left pleural space. These findings were corroborated by x-ray examination. Sputum typing gave no reaction on repeated attempts and two blood cultures were negative. Many pneumococci were found in the sputum. This patient received a total of 30 grams of Sulfapyridine without apparent toxic effect, but expired on the ninth hospital day. Autopsy revealed multiple abscesses and patchy consolidation of entire right lung, a collapsed left lung and a fibrous pleuritis and hydrothorax on the left. Before death the left pleural cavity was aspirated two times.

A quick analysis of the ten recoveries in the series not treated with Sulfapyridine reveals the following salient points: Seven males and three females were treated, age limits were from 1½ to 51 years, with the majority occurring in younger people. Four of the cases were typed, and of these, two received serum. No type reaction was obtainable in three cases, and three were not typed. The average period of hospitalization was 11.9 days. X-ray examination was made in three cases. Empyema developed in one case and this was cleared up by repeated aspirations. Three cases were given Sulfanilamide, but its effect was not noticeable. Case No. 8, female age 20, had arrested pulmonary tuberculosis. This was the only case which had a special nurse. She had a type No. VII pneumonia and was given 160,000 units of serum. I credit this with being a vital factor in her recovery. It is also interesting to note that repeated sputum examinations in this case failed to reveal a typable organism and that only when a positive blood culture was obtained could the correct typing be secured.

In the Sulfapyridine-treated cases, nine were males and one female. The ages varied from 11 to 89 years. In this group the ages were spread out between these extremes rather evenly. Three of the cases were typed and in four no type reaction could be obtained. Whether or not the administration of Sulfapyridine before collecting the sputum was a factor here, has not been established. In every case the pneumococci was the predominant organism and in every case the findings were typically those of a lobar pneumonia. There was one type I, one type II, and one type XI. The average period of hospitalization was 5.3 days as compared to 11.9 days in the untreated cases. X-ray examination was made in only one case.

#### PRESENTATION OF CASES

Case No. 1, white male, age 11 years, had been ill for six days before admission. Onset was sudden with high fever, chest pain and cough. White



blood count was 14,200, 10% non-filaments. Diagnosis was right lobar pneumonia. Sulfapyridine was started and recovery was prompt.

Case No. 2, male, age 63, became suddenly and acutely ill three days before admission. Onset was with a severe headache, chill, and chest pain. Examination on admission revealed a right lower lobar pneumonia, w.b.c. was 42,200, 100% polys., no lymphs seen, 8% non-filaments. Sulfapyridine was started at once and recovery was rapid.

Case No. 3, white male, aged 17, had been ill for four days before admission. Onset here was sudden with chest pain, fever, chill and cough. Expectoration was profuse on admission. Clinically, a right lobar pneumonia was present, w.b.c. was 22,700 polys. 84 and 14% non-filaments. Sputum showed many pneumococci, but no type reaction. Sulfapyridine started at once and recovery was uneventful.

Case No. 4, male, age 60. Ill one week before admission. Had a chill and developed chest pain three days before admission. Diagnosis on examination was left lower lobar pneumonia. W. B. C. was 17,300, sputum full of pneumococci, no type reaction obtainable. Sulfapyridine started at once with apparent effect. Recovery uneventful.

Case No. 5, male, age 37. Had been ill for 24 hours when I saw him at home. Findings were typical of a left lobar pneumonia. Onset had been sudden with fever, chest pain, and expectoration. Sputum rapidly became bloody. Patient hospitalized and Sulfapyridine started at once. W. B. C. on admission was 31,800, 10% non-filaments. Recovery was rapid.

Case No. 6 was a male, age 17, ill three days before admission. Onset was fairly acute and findings were typical. Examination of the sputum revealed type number I infection. Sulfapyridine was started and recovery was rapid. W. b. c. was 26,400, non-filaments 18% on admission.

Case No. 7 was a male, age 41, who became acutely ill three days before admission. Initial examination revealed a left lobar pneumonia with typical findings as regards pulse, respirations, temperature and chest pathology. W. b. b. was 24,100, 18% non-filaments and sputum yielded a type No. II pneumococcus. Sulfapyridine was started at once and patient responded rapidly.

Case No. 8, a white female, age 14, had suffered from pain in the right chest, fever, cough, and expectoration, for four days. Examination revealed consolidation over right upper lobe. Sputum showed many pneumococci, but gave no type reaction. Sulfapyridine was started and within 24 hours the patient appeared vastly improved. Fever continued for three days, but recovery was uneventful.

Case No. 9, a Mexican male age 89, had been ill for five days and on admission appeared very toxic. Considerable consolidation was found in left lung and there were few moist rales in the right lung. Cardiac irregularity was present and patient was digitalized. Sputum was full of pneumococci, but

no type reaction could be secured. W. b. c. was 12,700 with 10% non-filaments. Sulfapyridine was started and patient responded in characteristic fashion. He was well enough to go to a rest home on the sixth day following admission.

Case No. 10, a white male, age 52, was admitted within 36 hours of the onset of his illness. The diagnosis was questionable, but tentively called right lobar pneumonia and Sulfapyridine started. X-ray examination was made and right basal consolidation corroborated the diagnosis. Sputum was sent to laboratory and type number XI reported. Patient's clinical improvement was marked within 36 hours and recovery was uneventful.

As is clearly evident, the rapid drop in temperature, pulse, and respiration seems to be the outstanding effect of Sulfapyridine and this is characteristic of practically all reported cases. Marked clinical improvement accompanies the temperature fall. It is indeed dramatic to observe the changes which occur in these acutely ill individuals in such a short time. To find the pulse slow and steady, the temperature down, the cough better, the chest pain improved and the respirations slow within 24 to 36 hours after the drug is started has been a constant observation in this small series.

Chest findings on physical examination clear up slower than the temperature drop and the stethoscope often reveals complete consolidation in patients clinically vastly improved. Investigators are not agreed as to whether or not Sulfapyridine increases the rate of resolution of the pneumococcal process due to the fact that physical findings remain evident for variable periods of time after signs of toxemia disappear. The fact that a dramatic crisis may appear at variable periods of time in untreated cases makes this point a hard one to evaluate.

Practically every case showed some signs of toxicity to the drug. These varied from anorexia to severe nausea and vomiting and in three cases, marked mental confusion. Reduction of the dosage or stopping the drug temporarily resulted in all symptoms clearing up promptly. We noted no cases of kidney damage, but Southworth and Cooke have reported three cases of hematuria, abdominal pain due to ureteral obstruction, and nitrogen retention in Sulfapyridine treated cases. These cleared up promptly when the drug was stopped. Stockinger has demonstrated Sulfapyridine crystals in the urine of treated patients and Gross, Cooper, and Lewis have produced urinary concretions in varying degrees of renal damage in rats with the drug.

Cyanosis, leucopenia, and hemolytic anemia have been reported as complications of Sulfapyridine therapy by a number of investigators, but all agree that the effect is temporary and improvement occurs rapidly when the drug is stopped. I feel that the toxic reactions following Sulfapyridine are less than those observed with Sulfanilamide. Pepper,



Flippin and associates make the same report in their observation of 400 cases.

In this series, no patient was so toxic and ill that the drug could not be given by mouth. If this occurs, the soluble sodium salt can be given intravenously as reported by Marshall and Long. Marshall also reports that the nausea and vomiting due to Sulfapyridine is apparently of central origin as it occurs when the drug is given intravenously as frequently as when given orally.

Giving the drug in milk, water, or fruit juices, the use of sodium bicarbonate, the use of sedatives, intravenous saline and dextrose, and administration of nicotinic acid have all been recommended to lessen nausea and vomiting. I administered the drug along with a raw egg beaten up in orange juice to two cases with good results. Skin rashes, drug fever, and other rarer complications were not observed in any of these cases.

The dosage formula was the same in all adults, that is two grams on admission, two grams in three or four hours, and then one gram every four hours until 25 grams was given or the drug ordered stopped. Most cases received from 17 to 20 grams total and one case which terminated fatally was given 30 grams. This range of dosage is about an average of reported cases. Pepper and Flippin found that the longer the pneumonia had been present the less the Sulfapyridine needed to produce the desired effect and that cases over six or seven days old, rarely needed over fifteen grams of the drug.

No blood Sulfapyridine determinations were made in this series. As yet no investigators have been able to establish a definite relationship between blood concentration, dosage, and clinical results. Some patients excrete the drugs rapidly, others slowly. Absorption of the drug when taken by mouth seems inconstant and a high blood level does not necessarily mean a high toxicity. Pepper and associates have noted quick clinical results, and high toxicity associated with low blood concentration. On average dosage, their cases showed blood levels from 2.0 to 18.0 mgm. per 100 c.c. of blood.

It is evident that this series of cases is too small to permit drawing any very definite conclusions as to the ultimate value of Sulfapyridine. It hardly represents an average. There was only one female case out of ten who received the drug. In fact, there were only four female cases in the entire 25 which is not an average relationship. We must also remember that the virulence of pneumonia may vary quite widely from year to year and these cases may have been of lower than average severity. The cases were in the hospital too short a time for really adequate study and observation. Laboratory work was minimal in the group and only when correlated with the work of other men can the following conclusions be drawn:

1. That Sulfapyridine is an effective drug in the treatment of pneumonitis due to the pneumococcus.

2. That a marked reduction of temperature, pulse and respirations, associated with clinical improvement, usually appears within 24 to 36 hours after administration is started.

3. That toxic reactions follow the use of the drug; that these reactions are potentially serious, but apparently subside quickly when the dosage is lowered or stopped.

From a study of these cases and a review of the literature, the following recommendations are made:

1. That treatment with Sulfapyridine be started as soon as a diagnosis of pneumonia is made.

2. That the sputum be typed as soon as possible in all cases and that a blood culture be done routinely.

3. That frequent urine examinations be done to avoid undue renal damage due to the drug.

4. That the blood picture be closely followed by repeated hemoglobin, red and white cell determinations.

5. That x-ray examination be used whenever necessary to help establish the diagnosis.

6. That blood Sulfapyridine determinations be made a routine procedure in order that clinical observations and experimental studies may be more closely correlated in the future.

7. That an adequate fluid intake be maintained to aid in excretion of the drug.

In addition, to go without saying that pneumonia demands the best we have in medical and nursing care. Specific serum therapy will undoubtedly remain an important factor in treatment and the future may prove Sulfapyridine to be less valuable than anticipated at the present time.

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## 1940 CENSUS

(Continued from page 23)

cirrhosis of the liver, maternity deaths, diseases of infancy and nephritis, are gradually being conquered. Tuberculosis, which used to take 200 lives each year out of 100,000 population, now takes less than 55; typhoid is down from 36 to 2, and influenza and pneumonia combined are down from 200 to 110. Diphtheria is almost whipped—down from 40 to 2. In a little more than 35 years the deaths per 100,000 in these killers show a total net reduction of 542 per 100,000 population which would mean a saving of 704,600 lives this year that would have been claimed under the 1900 death rates.

## ROSES TODAY

When newspapers become interested in the oft-times abstract aspects of public health, it is an encouraging, heartening spectacle to the man of medicine. Such an interest was recently shown by The El Paso Herald-Post in a survey of the sewage disposal procedures in El Paso.

The piece was intelligently written, restrained in presentation, loaded with facts. So gladly a sweet-smelling rose apiece is voted to The Editor, E. M. Pooley, and his reporter, Murray Heal. May their tribe increase!

(1) El Paso Herald-Post, January 12, 1940.

## COMMUNICATIONS

Sir:

On behalf of the national officers of the American Red Cross I wish to transmit our deep appreciation for the splendid co-operation of the SOUTHWESTERN MEDICINE in the annual membership campaign of our organization.

Your generous contribution of space has enabled us to reach a larger audience of Americans. This support is doubly important this year because of the heavier responsibilities placed on the Red Cross by events at home and abroad.

Sincerely yours,

G. STEWART BROWN,

National Director, Public Information Service.

... Peritoneal endometriosis, a condition which gynecologists consider a definite clinical entity, was brought to the attention of the profession by John A. Sampson, of Albany, N. Y. The disease arises from implantation of endometrial tissue disseminated through the escape of menstrual blood into the peritoneal cavity. . . .

—Shattuck Lecture—*N.E.J. Med.*, Vol. 219, No. 16

## NEWS

### General

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted by the American Board of Obstetrics and Gynecology, meeting in Atlantic City, N. J., on June 8, 9, 10 and 11, 1940, immediately prior to the annual meeting of the American Medical Association in New York City.

Application for admission to Group A, Part II, examinations must be on file in the secretary's office not later than March 15, 1940. Formal notice of the time and place of these examinations will be sent each candidate several weeks in advance of the examination dates. Group A, Part II, candidates will be examined on June 8 and 9, and Group B, Part II, on June 10 and 11, 1940.

The annual dinner of the board will be held in New York City on Wednesday evening, June 12, at the Hotel McAlpin.

For further information and application blanks, address Dr. Paul Titus, secretary, 1015 Highland Building, Pittsburgh, (6) Pa.

A sectional meeting of the American College of Surgeons will be held in Los Angeles, Calif., with headquarters at the Biltmore Hotel, on January 29, 30 and 31. Eleven states, the province of British Columbia, and by invitation Mexico and the Hawaiian Islands, will participate. The states included are: California, Arizona, New Mexico, Colorado, Utah, Nevada, Oregon, Washington, Montana, Idaho and Wyoming.

Of special interest will be a series of group clinical conferences, to be held on Wednesday afternoon, January 31, at the headquarters hotel. The subjects will be: orthopedics, urology, obstetrics, gynecology, ophthalmology, otolaryngology, thoracic surgery, neurological surgery and cancer clinics.

In addition to the clinics and clinical demonstrations and conferences at the hospitals, scientific sessions, conferences and panel discussions will be held at the headquarters hotel. Among the subjects to be discussed are cancer, fractures, thyroid surgery, cardiovascular surgery, intestinal obstruction, craniocerebral injuries, thoracic surgery, hand injuries, prevention of postoperative pulmonary complications, and many more topics. Medical motion pictures will be shown daily. These will cover surgical technique and other aspects of general surgery, eye, ear, nose and throat surgery, and the other specialties.

The medical profession at large, as well as hospital trustees, superintendents, pathologists, dietitians and other hospital executive personnel will find much to interest them in the sessions and personal contacts at this meeting. Members of the state medical association are most cordially invited to attend. There will be no registration charge.

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The Arizona state executive committee is: E. Payne Palmer, M. D., Phoenix, chairman; Roderick D. Kennedy, M. D., Globe, secretary; Charles A. Thomas, M. D., Tucson, counselor.

### El Paso

A regular meeting of the Tumor Clinic was held Tuesday, December 12, 1939, at 1:00 p. m., at City-County Hospital. The program was as follows: 1. Branchial cleft cyst. 2. Hodgkin's disease. 3. Breast tumor. 4. Lymphadenitis, generalized. Reports on old cases were made.

A regular meeting of the staff of the City-County Hospital was held Wednesday, December 20, 1939, at 6:30 p. m., at City-County Hospital. The new officers elected were as follows: Chief of staff, J. Mott Rawlings, M. D.; vice-chief of staff, Robert Thompson, M. D.; secretary, R. P. Hughes, M. D.; efficiency committee, A. P. Black, M. D., and M. P. Spearman, M. D.

A regular staff meeting of the Hotel Dieu Sisters' Hospital was held Tuesday, December 5, 1939, at 12:10 o'clock in the auditorium of the Nurses' Home. Luncheon was served. The program was as follows: Thoracoplasty with Motion Pictures, Dr. F. P. Miller.

The following officers were elected: Chief of staff, Dr. B. F. Stevens; vice-chief of staff, Dr. E. A. Duncan; secretary-treasurer, Dr. J. D. Petcolas; chief of surgical service, Dr. J. L. Green; chief of medical service, Dr. E. W. Rheinheimer. Committees for the coming year have not yet been named.

El Paso County Medical Society met in its last regular session of 1939 on December 11 at Hotel Cortez.

Dr. James J. Gorman, retiring president, yielded the chair to the incoming head of the society, Dr. Leslie M. Smith.

The report of the co-ordinating committee was given by its chairman, Dr. F. O. Barrett. A plan of co-operation between the county medical society, the public school system and the city-county health unit was outlined.

The annual election of officers resulted in the following being named to serve for the coming year: President-elect, Dr. H. H. Varner; vice-president, Dr. Harry Leigh; secretary-treasurer, Dr. J. L. Stowe; censor, Dr. B. F. Stevens; chairman committee on medical economics, Dr. J. Mott Rawlings; librarian, Dr. Mildred Murray; representatives to board of managers of SOUTHWESTERN MEDICINE, Drs. Paul Gallagher and L. O. Dutton; chairman cancer committee, Dr. J. Leighton Green; members milk committee, Drs. A. P. Black and J. Travis Bennett; members nominating committee, Drs. W. W. Waite, R. B. Homan, Sr., and John Hardy; delegates to state medical association, Drs. R. B. Homan, Jr., and Felix P. Miller; alternate delegates, Drs. Charles E. Renick and E. W. Rheinheimer.

## AUXILIARY NEWS

### El Paso

The regular meeting of the Woman's Auxiliary to the El Paso County Medical Society was held Monday afternoon, November 11, at the home of Mrs. S. G. Von Almen.

The guest speaker on the program was Dr. I. M. Epstein. His subject was, "The Child Guidance Clinic."

After the program the business session was held, with Mrs. Branch Craige, president, presiding.

Two resolutions were passed: (1) It was moved and seconded that the El Paso Auxiliary contribute their regular amount to the El Paso Tuberculosis Society for the year. (2) It was moved and seconded that resolutions of sympathy be sent to the families of (the late) Dr. J. W. Tappan and (the late) Dr. H. E. Stevenson.

The next meeting will be a luncheon at the Hilton Hotel, January 8, 1940. The meeting was adjourned and tea was served.

The hostesses assisting Mrs. Von Almen were: Mesdames J. Hal Gambrell, Frank Garrett, James J. Gorman, John B. Gray, Sigmund Haffner, John Hardy, C. M. Hendricks, Russell Holt, Ralph Homan, R. B. Homan, Jr., D. H. Huffaker, E. H. Irvin, W. R. Jamieson, B. F. Jenness, C. E. Jumper, Harvey Kinard, Sam King, James W. Laws, Harry Leigh and T. C. Liddell.—*Malvina Spearman*.

## MISCELLANY

### THE SCHOOL OF THE MEDICAL SOCIETY

Every physician in New Jersey is instructed and trained in two schools:

First, his *compulsory* training in the medical school and in the hospital internship. This instruction is 95% in *scientific* medicine, with scant reference to the *administrative* phase of medicine.

Second, his *voluntary* training in *administrative* medicine, which he gets in the school of the county medical society and the state society.

#### *The School of the County Society*

The county medical society is essentially a *school of research* along three lines:

1. Making surveys of local medical needs.
2. Planning to supply those needs.
3. Instructing and inspiring local officials and welfare organizations to do their part in supplying local medical needs.

#### *The Faculty of the School of the County Society*

The faculty of the school of the county society consists of its officers and its committee chairmen.

The assistants to the faculty are the members of the several committees. From one-quarter to one-third of the members of the county societies are enrolled in the faculties, and as active research workers of the state and the county societies serv-



ing on committees. Count them and prove the truth of this statement.

The importance of the schools of the state and county medical societies is shown by the use of the term *faculty* to denote the members of the medical profession in the call to form The Medical Society of New Jersey in 1766. The term is repeated in the record of the meeting of May 1, 1776, and again on May 12, 1818. The name of the Medical Society of the State of Maryland is still "The Medical and Chirurgical Faculty of Maryland."

#### *Text-Books*

The *County Bulletins* and the *State Journal* are the essential text-books from which *all the members* of the county society may learn of the activities of the society whether or not they attend the meetings and hear the *verbal* reports.

#### *Discussions and Decisions*

The services of the editors of County Society Bulletins and the reporters of the State Journal are both honorable and essential. The subjects with which they deal may be considered under two headings:

1. Discussions.
2. Decisions.

Discussions and progress reports are always important items of current interest, for they reveal what the members are thinking about, even if definite decisions are not reached.

The annual index of the State Journal lists every subject of discussion that is contained in the monthly reports of the county reporters, even if the item is only 2 lines in length.

#### *Grades and Advancements*

There is a system of grading in the school of the medical society, in which the physician may advance step by step:

First, as a member of a committee of a county society.

Second, as a chairman of a committee.

Third, as an administrative officer.

Fourth, as a member of a committee of the state society.

Fifth, as chairman of a committee of the state society.

Sixth, as an administrative officer of the state society.

The members are expected to advance from grade to grade according to their native ability and their experience. There is always an opportunity for a member to advance to a higher position of research and teaching, thereby enlarging his own field of usefulness, and also giving another man an opportunity to perform an honored service on the faculty of the school of the medical society.

—*Jour. Med. Soc. N. J.*

#### NATIONAL PHYSICIANS' COMMITTEE FOR EXTENSION OF MEDICAL SERVICE

When Mr. Frank Gannett, the well known newspaper editor of New York state and the inspiration of the National Committee to Uphold Constitutional Government, allowed his name to be

proposed as presidential candidate for the Republican party, the non-partisan character of this committee became lost. The Physicians' Committee for Free Enterprise in Medicine, which was closely associated with the Gannett committee, lost thereby its non-partisan character. For this reason, a group of prominent physicians formed a new committee for Free Enterprise in Medicine in a strict-Committee for the Extension of Medical Service, to carry on the activities of the Physicians' Committee for Free Enterprise in Medicine in a strictly non-partisan way.

Dr. Edward H. Cary, of Dallas, former president of the A. M. A., is chairman of the new committee. Dr. Austin Hayden, of Chicago, is secretary, and Dr. N. S. Davis, III, of Chicago, is treasurer. The other members of the National committee are: Dr. Irvine Abell, Louisville; Dr. F. F. Borzell, Philadelphia; Dr. John A. Hartwell, New York; Dr. Roger I. Lee, Boston; Dr. A. McMahon, St. Louis; Dr. E. H. Skinner, Kansas City; Dr. W. F. Braasch, Rochester, and Dr. C. B. Wright, Minneapolis.

The purposes of this national committee are the making more widely available the services, more generally known the achievements, and safeguarding the independence of American medicine.

When one considers the high plane of medicine in the United States, the low mortality and morbidity in its population, and the general availability of medical care, there seems to be little excuse for the determined efforts being displayed to revolutionize medical practice in this country. Propaganda in its worst form is being fostered, even by the federal government, through lay magazines, the press and the radio in an effort to discredit the medical profession. There is need for this new national committee of physicians to operate in a national sphere, as our state medical associations are doing within state borders, to bring the truth to the public and to do everything possible to maintain free initiative in medicine for the good of the public.

A small group of physicians from throughout the state met in St. Paul, November 4, at the call of Dr. F. J. Savage, to hear Mr. John M. Pratt, executive administrator of the new National Physicians' Committee, explain the objectives of this new committee. Mr. Pratt resigned his former position with the Gannett committee and will take part in meetings all over the country similar to the St. Paul meeting, which was the first.

Dentists, pharmacists and other allied groups, interested laymen, as well as physicians, will be given the opportunity to support this nationwide committee by becoming members and making any contributions they are able. The purposes of this national committee supplement and in no way conflict with the activities of the A. M. A. It is not generally understood that the propaganda and legislative activities of the A. M. A. are limited, inasmuch as its main function is the scientific betterment of its members. If any considerable part its activities were devoted to legislative affairs, the organization would be subject to the in-

come tax according to the regulations of the powers that be.

—Minn. Med.

### TUBERCULOSIS, GREAT DESTROYER

Down through the ages tuberculosis has been recognized as "The Great Destroyer." As "Captain of the Men of Death," it has stalked through every land and every age, showing no respect to color, race or creed.

But, while tuberculosis is no respecter of persons, it does respect certain conditions. Knowledge of this fact has enabled us intelligently to shape our programs of prevention, control and treatment of this dreaded enemy of mankind.

Centuries of observation and study, decades of clinical and laboratory research, thousands of human lives and millions of dollars have gone into the making of the great tuberculosis control program as we know it today. And we are grateful for every contribution that has come to us through the years.

The tuberculosis control program is no longer a blind guess at what should or should not be done; we can now feel assured that it rests on a sound scientific clinical and epidemiological foundation. Koch's postulates still stand, and Trudeau's contribution placed the rest treatment, including surgical procedures, on a logical footing that has successfully withstood criticism and stimulated concentrated efforts by far-sighted groups from all parts of the world. Today we can truly say that the practical application of our knowledge in tu-

berculosis control can successfully bring the ravages of this age-old destroyer to an almost insignificant low figure in a comparatively short period of time.

The crying need of our day is for physicians and laymen, educators, parents and pupils, civic and social groups, law makers, public servants, and, in short, every citizen of our state and nation, to join the crusade against this age-old enemy—tuberculosis.—*Bull. Kentucky Dept. of Health.*

### BOOK NOTES

DIAGNOSTIC SIGNS, REFLEXES AND SYNDROMES (Standardized), by Wm. Esbert Robertson, M.D., F.A.C.P., Visiting Physician, Medical Division, Philadelphia General Hospital; Visiting Physician, St. Luke's and Children's Hospital and Northwestern Hospital; and Harold F. Robertson, B.S., M.D., F.A.C.P., Instructor in Medicine, University of Pennsylvania; Assistant Visiting Physician, Medical Division, Philadelphia General Hospital, and Methodist Hospital. Pp. 309. Fabrikoid. \$3.50. With thumb index. Philadelphia, F. A. Davis Company. 1939.

One of the most pernicious addictions of an otherwise intelligent profession is the assignment of men's names to portions of the anatomy, to syndromes and diagnostic signs. The practice is strictly unscientific, productive of confusion and serves only to tickle the foolish vanity of the original describer. It is to be regretted that the great mass of such nondescriptive terms has at last made necessary the publication of a catalogue which endeavor

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\*"Treatment of Acute Anterior Urethritis with Silver Picrate," Knight and Shellanski, AMERICAN JOURNAL OF SYPHILIS, GONORRHEA AND VENEREAL DISEASES, Vol. 23, No. 2, pages 201-206, March, 1939.

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ors to completely index and define all the known sops to vanity now in use. Regrettable though its necessity may be, this book certainly fills a crying need in medicine today.—M. P. S.

PRIMER OF ALLERGY, by Warren T. Vaughan, M.D., Richmond, Virginia. Pp. 140, including index. Cloth. Illustrations by John P. Tillery. St. Louis, The C. V. Mosby Co., 1939. Price \$1.50.

Any physician knows that, in treating chronic diseases such as allergy or diabetes, he is apt to show best results in the patient who knows enough about his disease to intelligently cooperate with the directions and regime prescribed for him. At the same time a busy practitioner can hardly go into minute details with each patient that comes his way.

Happily books like this solve the dilemma neatly. Study of this book will inform one's allergy patients much more intelligently and completely than any other method known. It should not be difficult to keep the patient interested in his own disease, but at times boredom does come. This book should go far toward maintaining the patient's interest in following his physician's directions. The allergist could well keep a few of these volumes on hand for loaning to his patients.—M. P. S.

PRACTICE OF MEDICINE, by Jonathan Campbell Meakins, M.D., LL.D., Professor of Medicine and Director of the Department of Medicine, McGill University; Physician-in-Chief, Royal Victoria Hospital, Montreal; Fellow of the Royal Society of Edinburgh; Fellow of the Royal Society of Canada; Fellow

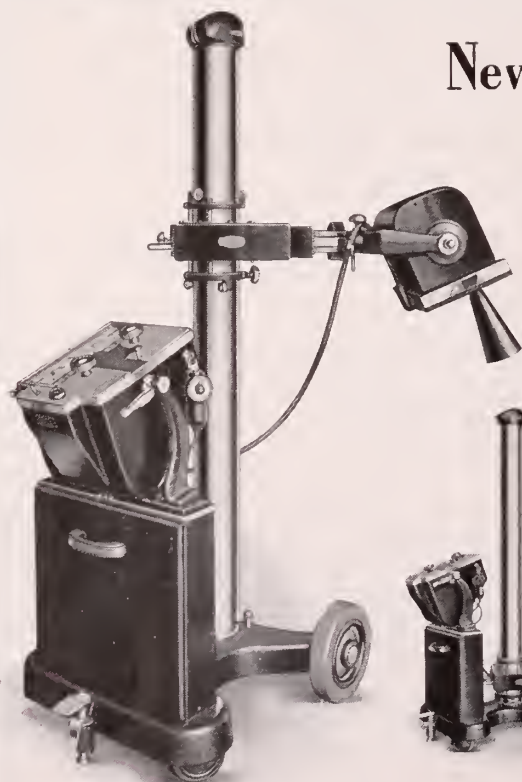
of the Royal College of Physicians, London; Fellow Royal College of Physicians, Edinburgh; Fellow Royal College of Physicians, Canada; Fellow American College of Physicians. Pp. 1413, including index. Illustrations, 521, including 43 in color. Fabrikoid. Second edition. St. Louis, The C. V. Mosby Co., 1938.

The distinguished author of this excellent textbook was educated and trained in the orthodox, classical manner. After years of experience as a clinician and teacher, he decided that it was necessary to revolutionize or modernize many of the concepts of classical medicine. The result is a book in which more emphasis is placed on the history of illness, functional pathology, etiology, prevention and cure, and less emphasis on morbid anatomy, bacteriology and descriptions of individual symptoms. The first edition, which was published in 1936, has been accepted as the standard textbook in many medical schools.

As a result of friendly criticism and of a desire to record some of the recent, important advances in medicine the author has revised much of the earlier work. Some of the illustrations have been removed and new ones added. The x-ray pictures, in general, are excellent and add greatly to the descriptive value of the text. There are some 521 illustrations including 43 in color. Our only criticism of the book is that some of the color plates are unnecessarily vivid.

In the second edition appendicitis has been included under diseases of the gastro-intestinal system, having been omitted in the first edition. Several new conditions have been amplified or added,

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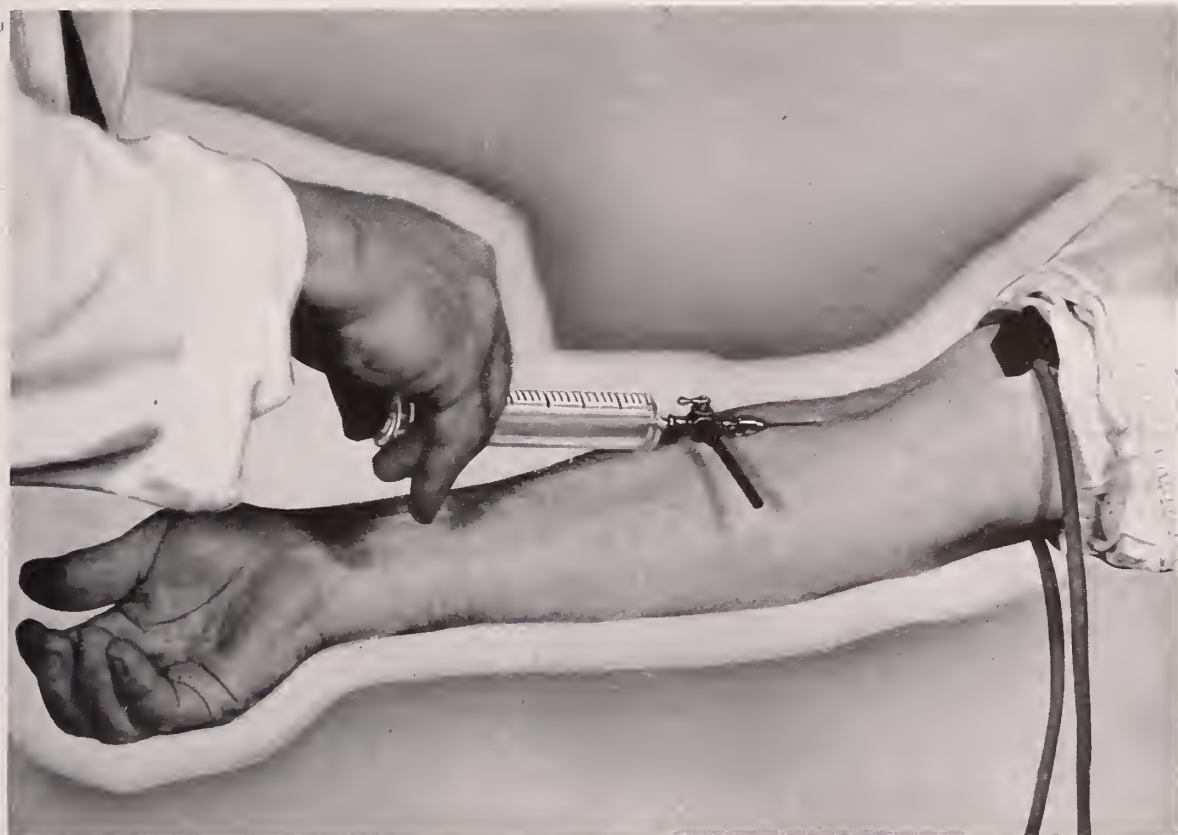
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The introduction to the book is particularly valuable to the student and practitioner of medicine and the reader wishes that it could be offered in monographic form. As a treatise on the art of the practice of medicine it ranks with Sir William Osler's better essays.—C. D. A.

ACCEPTED FOODS, AND THEIR NUTRITIONAL SIGNIFICANCE, a publication of the Council on Foods of the American Medical Association. Cloth, price \$2.00 postpaid. Pp. 512; Chicago: American Medical Association, 1939.

ACCEPTED FOODS, AND THEIR NUTRITIONAL SIGNIFICANCE contains descriptions and detailed information regarding the chemical composition of more than 3,800 accepted products, together with a discussion of the nutritional significance of each class of foods. The book provides also the Council's opinion on many topics in nutrition, dietetics and the proper advertising of foods.

This book is a reference work for persons interested in securing authoritative information about foods, especially the processed and fabricated foods which are widely advertised. The accepted products are classified in various categories; fats and oils; fruit juices, including tomato juice; canned and dried fruit products; grain products; preparations used in the feeding of infants; meats, fish and sea foods; milk and milk products other than butter; foods for special dietetic purposes; sugars and syrups; vegetables and mushrooms; and unclassified and miscellaneous foods, including gelatin, iodized salt, coffee, tea, chocolate, cocoa, chocolate flavored beverage bases, flavoring extracts, dessert products, baking powder, cream of tartar, baking soda, cottonseed floor. There is a subject index as well as an index of all the manufacturers and distributors of food products that stand accepted by the Council on Foods.

PSYCHOBIOLOGY AND PSYCHIATRY. By Wendel Muncie, M. D. With a foreword by Adolf Meyer, M.D., LL.D., Sc.D. Cloth. Pp. 739, with 69 illustrations. St. Louis: C. V. Mosby Company, 1939 \$8.00.

The author has undertaken an extremely difficult task in writing this textbook on psychobiology. He has attempted to give concrete, verbal form to what is essentially an attitude. The psychobiologists, inspired originally mainly by Adolf Meyer, hold to no fixed "school of thought." Both in their observations of human behavior and in their efforts at rehabilitation of maladjusted individuals they utilize whatever they consider useful from the various schools of psychiatry and psychology. Their particular contribution lies in the emphasis which they place on the individualization of approach to each case, treating each person as an indivisible body-mind—a living, changing, reacting part of his external and internal environment.

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look on the practice of medicine. But the esoteric terminology might well discourage any except genuine students, and psychiatrists. The vocabulary of the psychobiologists (ergasiologists) is not the standard nomenclature of psychiatry. They have a coined vocabulary which they use in addition to the sufficiently bewildering "jargon" of psychiatry. Under such circumstances the author has not been as careful as he should have been to define each new term the first time it was used.

Psychobiology is so resistant to artificially set up "norms" and classificatory "systems" that it is difficult for an outsider to grasp and utilize its ideas as presented in a text. It is a manner of psychiatric approach that can scarcely be learned

except through a personal apprenticeship to a psychobiologist. Their very reluctance to classify and delimit and systematize makes the textbook difficult reading and bewildering teaching. It lacks the almost essential teaching tool of a cohesive skeleton outline on which to hang the separate facts.

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one who is not thoroughly familiar with the progress of recent psychiatric thought.

The section devoted to treatment could be read by every medical student and practicing physician for their own soul's good and the benefit of their patients.

A few simple changes might help to increase easy readability. A glossary of terms ought to be added. An outline could be included, giving in parallel columns older terminology and the more or less synonymous coined names of ergasiology. The slight inevitable inaccuracies would probably not be as great as those now left in the minds of confused readers, and it would facilitate their orientation. The illustrative diagrams and speci-

men charts are not always self-explanatory. The reader would be helped by more carefully descriptive legends to accompany them.

This book deserves a more widely disseminated reception than it is likely to get.—I. M. E.

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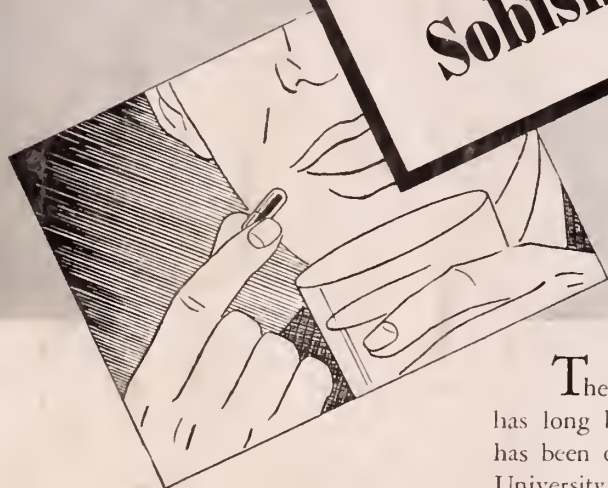
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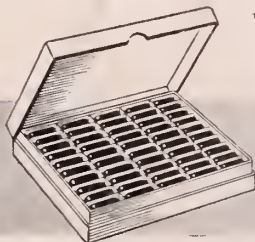
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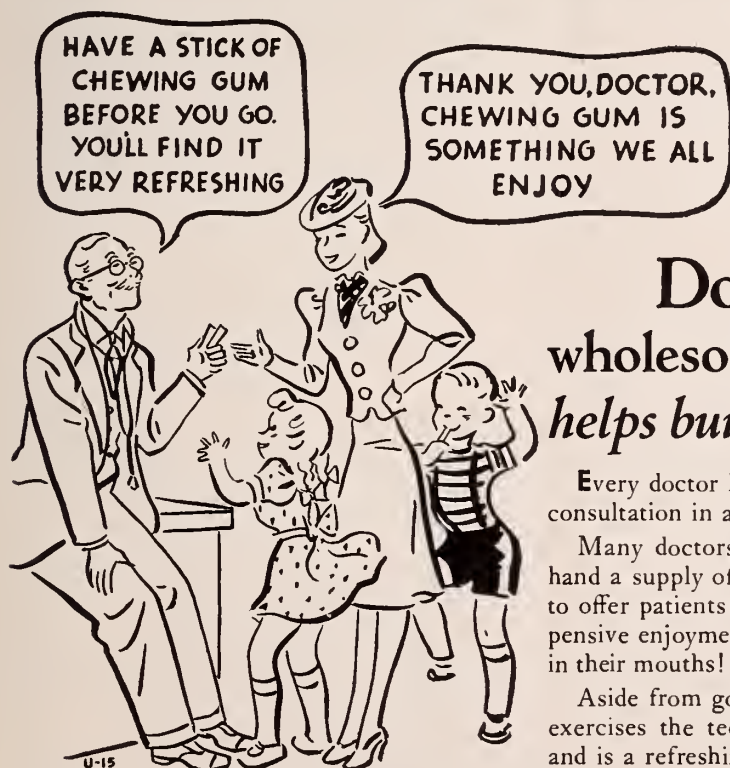
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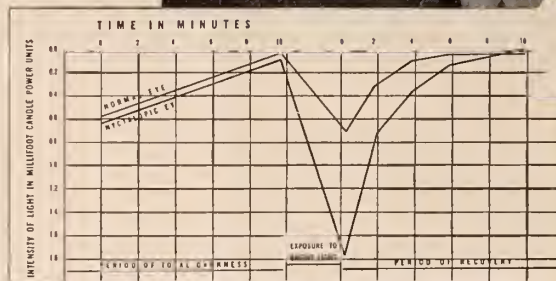


This page is the second of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A two-page insert on the same subject appears in the February 17 issue of The Journal of the American Medical Association.

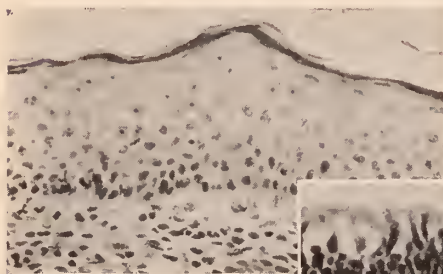
## Manifestations of Vitamin A Deficiency

One of the early manifestations of vitamin A deficiency is nyctalopia, a loss of visual acuity in dim light. While several pathologic states (retinitis pigmentosa, toxic amblyopia, detachment of the retina) also produce night blindness, vitamin A deficiency is probably the most frequent cause. After exposure to the blinding glare of a bright light the normal eye adapts itself relatively quickly to lowered illumination. In nyctalopia due to vitamin A deficiency, the time required for recovery of visual acuity is longer.

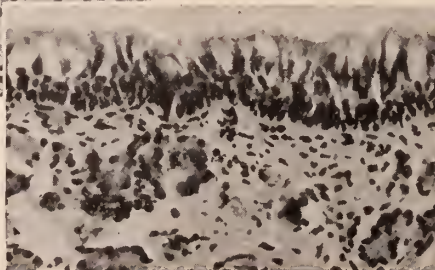
In otherwise normal eyes, measurement of capacity for dark adaptation by means of the biophotometer has been suggested as a method of discovering vitamin A deficiency.



Lower line shows the longer time required for the recovery to pre-exposure level by the nyctalopic.



Above, stratified, keratinizing epithelium of the turbinate mucous membrane of a vitamin A deficient monkey; at right, normal mucosa.



Pathologic epithelial changes produced by vitamin A deficiency are illustrated by the photomicrographs of turbinate mucous membrane taken from normal and vitamin A deficient monkeys. The progressive pathologic process consists of atrophy of the epithelium, reparative proliferation of the basal cells and finally, as depicted in the upper photograph, replacement of the normal by a stratified, keratinizing epithelium.







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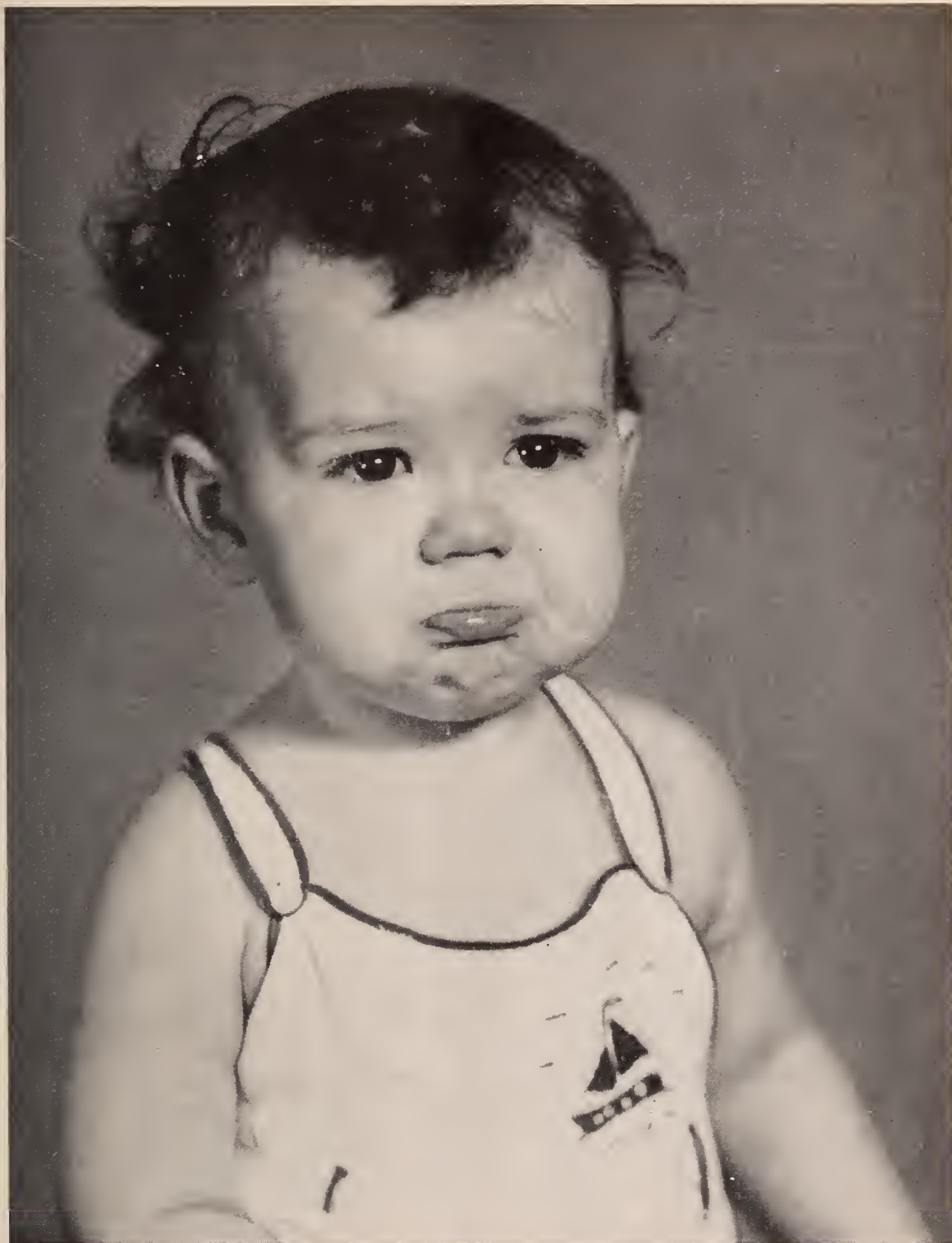
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THE SOUTHWESTERN MEDICAL ASSOCIATION

VOL. XXIV

EL PASO, TEXAS, FEBRUARY, 1940

No. 2

## Endaural Fenestration of the External Semicircular Canal (Report of 120 Cases)

JULIUS LEMPert, M. D.  
New York, N. Y.

THAT a temporary improvement of hearing in otosclerosis can be obtained by fistulization of the labyrinth has been known and at intervals reported. The permanent maintenance of the hearing improvement thus obtained remained a surgical problem to be solved. Since the days of Barany and Jenkins, both Holmgren and Sourdis have preoccupied themselves with a solution of this problem and made definitely important contributions in the advancement of this work. It is the consensus of opinion that one of the major factors responsible for the defeat of all surgical efforts made by my predecessors was due to their inability to maintain permanently open the fistula created. The technic which I devised and have employed for the last two years in a series of one hundred and twenty cases seems to have overcome this outstanding difficulty in the vast majority of cases.

The Lempert fenestration technic for the permanent restoration of practical physiological hearing in otosclerosis is based on the theory that a free mobility of the perilymph and endolymph for air-borne sound is essential to normal hearing by air conduction and that any impedance to such mobility results in deafness. Therefore, if in a case of air conduction deafness due to impedance resulting from otosclerosis, a permanently free mobility of the perilymph and endolymph for air-borne sound could be surgico-anatomically reestablished and the air conduction mechanism could be reconstructed to conform to the new surgical anatomy so as to further enhance the mobility of these endolabyrinthine fluids for air-borne sound, a permanent restoration of practical physiological hearing should be obtained providing the hearing by bone conduction in the three conversational frequencies 512, 1024 and 2048 is within the indicated normal limits at the time of operation.

The fenestration technic advocated for the permanent restoration of practical physiological hearing in otosclerosis is an endaural, plastic reconstruction of the auditory mechanism for the creation of a new air conduction apparatus. It consists of:

1. The creation of a trough-like fenestra of specified length and width in the bony capsule of the external semicircular canal with the aid of a polishing and burnishing burr. This fenestra is created in order to replace the non-functioning fenestra ovalis and thus mobilize the labyrinthine perilymph and endolymph for air-borne sound.

2. The incorporation of this newly created external semicircular canal fenestra, which is to assume the function of the fenestra ovalis, within the confines of a newly reconstructed air-filled and hermetically sealed tympanic cavity. To accomplish this it is necessary to:

- a. Create a completely intact, liberated tympanomeatal cutaneous membrane which consists of that portion of the cutaneous lining from which the inferoposterior, posterior, superoposterior, superior and anterosuperior bony walls of the external auditory canal have been resected plus the tympanic membrane whose posterior, superoposterior, superior and anterosuperior margins of its circumference have been freed by the resection of the corresponding portions of the sulcus tympanicus on either side of the Notch of Rivinus. This must be accomplished without severing the continuity and attachment of the outer dermal layer of the liberated tympanic membrane to the liberated cutaneous lining of the bony canal walls.

- b. Amputate the head and neck of the malleus thus freeing and mobilizing the tympanic membrane in order to permit the necessary manipulation thereof for its extension in a posterior direction so that the membrane flaccida may reach the external semicircular canal fenestra.

- c. Maintain the incus with its short crus in position within the fossa incudis in the posterior lower part of the epitympanum.

- d. Widen the tympanic air space by removing the pyramidal eminence from the posterior or mastoid wall of the tympanic cavity proper.

- e. Cover and seal hermetically the reconstructed, widened air-filled tympanic cavity with the tympanic portion of the intact tympano-meatal membrane in a manner which will enclose the external semicircular canal fenestra within the confines of this newly created air space.



3. The reconstruction of the osseus portion of the external auditory canal. This results from the creation of the tympanomeatal membrane. It serves to permit direct accessibility of air-borne sound to the new inner wall of the external auditory canal which is now formed by the tympanic part of the tympanomeatal membrane which covers the newly created and widened air-filled tympanic cavity of which the fenestra in the external semicircular canal is now a part.

The degree of improvement in hearing which is obtained and maintained as a result of such plastic reconstruction of the auditory mechanism in an otosclerotic ear depends directly upon and is in direct proportion to the exactitude and perfection with which each major step in this technic is completed plus the finesse employed in the execution of each and every one of the technic minutiae.

#### INDICATIONS

The above described fenestration is indicated:

1. When the hearing loss is bilateral and progressive.

2. When the stapes within the fenestra ovalis is fixed but the round window membrane has remained normal.

3. When the hearing by air conduction in the conversational frequencies 512, 1024 and 2048 has declined to a level which makes practical hearing of conversation impossible, while the hearing by bone conduction for these frequencies, as determined audiometrically under the condition of masking, has remained normal or declined to a level not lower than 30 DB. Bone conduction is the index of cochlear nerve function. Therefore, unless the bone conduction in the conversational frequencies is within the above indicated limits for normalcy fenestration is contraindicated.

4. When the tympanic membrane is normal and completely intact.

5. A complete absence of middle ear infection is absolutely essential and a history of never having had a middle ear suppuration before is preferable.

6. When the Eustachian tubes are patent.

7. A normal state of health is essential.

Our diagnostic means for determining which cases are definitely suffering from otosclerosis are rather meagre. I am, however, thoroughly convinced that otosclerosis is much more prevalent than it is generally assumed to be and that many cases diagnosed and labelled as Otitis Media Catarrhalis Chronica are really cases of otosclerosis.

A permanent restoration of the highest degree of practical physiological hearing by air conduction can be obtained following this fenestration technic in any patient suffering from a loss of air conduction hearing, no matter how great, in the presence of the aforementioned requirements.

The indications described were arrived at in retrospect after careful observation and study of many cases which were operated upon without a clear understanding of what was actually required

in order to obtain the permanent restoration of practical hearing following fenestration of the labyrinth.

The following methods were employed to determine the preoperative and postoperative hearing state:

1. Audiometric testing which included an air conduction determination, a bone conduction estimation, and a bone conduction estimation under the condition of masking. A 6A Western Electric Audiometer was employed for these tests.

2. Fork tests both by air and bone conduction.

3. Testing by normal conversation and whisper.

#### SURGICAL ACCIDENTS

I. Injury to the cutaneous tympanomeatal membrane: In one case the meatal portion of the plastically created cutaneous tympanomeatal membrane was accidentally severed and detached from the outer dermal layer of the tympanic portion. This accident made it impossible to manipulate Shrapnell's membrane into position over the external semicircular canal fenestra. The severed meatal portion of the tympanomeatal membrane was placed over the fenestra.

II. In one case the amputation of the head of the malleus with the aid of a snare instead of the clipper resulted in a contra-coup longitudinal perforation of the membrana tensa by the manubrium mallei. This perforation healed and completely closed within three weeks post-operatively.

III. Fracture of the vertical mastoid portion of the Fallopien Canal: In removing the inferoposterior bony canal wall down to the level of the vertical portion of the facial canal the bony capsule of the Fallopien canal was accidentally fractured and the facial nerve was exposed but not injured. This resulted in facial nerve paresis which gradually subsided. The bony mastoid structure in this case was exceptionally brittle.

IV. The incudostapedial joint was accidentally disarticulated in three cases and resulted in the complete dislocation of the incus from the fossa incudis in each instance. This necessitated the removal of the incus in these cases.

V. In one case, where an extremely contracted mastoid process was encountered with the lateral sinus impinging upon the posterior bony wall of the external auditory canal, the sinus plate was accidentally struck and fractured and the lateral sinus wall punctured with a sharp curette during the process of removing the pyramidal eminence. The bleeding was controlled with a small piece of Iodoform gauze applied to the bleeding point. The Iodoform gauze was removed at the end of about five minutes and no further bleeding was countered. The operation was successfully completed. The postoperative course and convalescence remained uncomplicated.

#### POSTOPERATIVE SEQUELLAE

1. Postoperatively there has never been observed a rise in temperature of more than one degree



in any of the one hundred and twenty cases upon which the fenestration was performed.

2. Vertigo and nausea, in a varying degree, was present in all the cases for a period of from one to three days following the operation.

3. Two cases developed a serous labyrinthitis with intralabyrinthine fluid pressure symptoms two to three days postoperatively. This was apparently due to an inflammation of the tympanomeatal membrane extending to the perilymph space. In these two cases the serous labyrinthitis resulted in a complete loss of vestibular and cochlear function.

4. In one case necrosis of a small part of the anterior border of the outer mastoid cortex resulted and delayed the healing of the mastoid cavity until the sequestrum extruded itself two months later. The mastoid wound then epithelialized and healed promptly thereafter.

5. One patient died of a coronary thrombosis while dressing to go home from the hospital. This was purely coincidental and had no relation whatsoever to the operation.

6. No infection of the external, middle or internal ear was encountered in any of the cases following operation.

7. No patient in whom the fenestra remained permanently open ever complained of any subjective fistula symptoms after the third postoperative week.

#### SUMMARY REPORT OF HEARING IMPROVEMENT RESULTS

The fenestration operation was performed in one hundred and twenty cases within the past two years.

A permanent restoration of practical physiological hearing resulted in sixty-nine cases. These sixty-nine patients are now socially and economically rehabilitated.

A marked improvement in conversational hearing resulted in ten cases. The improvement of hearing in these ten cases, though audiometrically impressive, did not, however, reach the level of improvement necessary for the restoration of practical hearing.

A further impairment of hearing resulted in fourteen cases. The impairment of hearing in these cases, though audiometrically significant, practically, however, it did not in any way affect these patients as none of them were able to hear practical conversation prior to surgical intervention.

The hearing remained unimproved in twenty-seven cases.

In every case, where a permanent restoration of practical physiological hearing was obtained following fenestration, tinnitus completely disappeared on the operative side. In those cases where the hearing improvement did not reach the practical level, the intensity of the tinnitus was greatly diminished. In those cases where the hearing remained unimproved, the tinnitus remained the same. In

those cases where the hearing was further impaired following fenestration, the tinnitus was proportionately intensified.

Although the vestibular response to the fistula test remained positive in 100 of the one hundred and twenty cases operated upon, the hearing was improved in only seventy-nine cases. Thus, in 21 of the one hundred cases, where the response to the fistula test remained positive indicating that the newly created fenestra had not closed, the hearing, nevertheless, remained unimproved.

The following audiograms are presented as characteristic examples of the type and amount of hearing improvement, as expressed in decibels, which was recorded in the successfully operated cases.

#### FENESTRATION VS. HEARING AID

1. Fenestration of the external semicircular canal restores physiological hearing function to the deafened. A hearing aid amplifies the spoken voice without improving the hearing function.

2. There is sufficient evidence in existence today that the progression of the hearing loss, which accompanies otosclerosis, is retarded and perhaps even checked, which only time can prove, as a result of fenestration of the external semicircular canal. The hearing aid permits the loss of hearing to continue to progress unabated until it reaches the stage when the hearing aid ceases to be of any value to the patient.

3. Tinnitus, which is the most distressing symptom accompanying deafness from otosclerosis, is eliminated following a successful fenestration operation. Whereas, when the hearing aid is employed, the tinnitus remains unchanged.

4. Fenestration restores the hearing intelligibility for group conversation. The hearing aid is conversations.

5. Following fenestration, the patient can hear conversation or any other sound coming from any direction, even when not directed at him. With the hearing aid, they can only hear person-to-person conversation when directed towards the receiver of the hearing aid.

6. Following fenestration, conversation is heard as it is normally spoken, while conversation heard with the hearing aid is distorted in tone.

7. The restoration of physiological hearing, as a result of fenestration, improves the entire mental status of the patient, whereas the wearing of a hearing aid depresses the mental state of the patient still further.

8. The hearing aid cannot be employed for direct telephone conversation.

9. The social and economic advantages obtained as a result of a successful fenestration operation are limitless. The hearing aid is a deterrent to social and economic rehabilitation.

10. The use of the hearing aid cannot be compared to the use of visual aids, because we are expected to hear conversation or any other sound directed towards us or anyone else, in and from any

direction. Such hearing protects us and guides us in life's hazards and is also necessary in our daily economic life, whereas, we are only expected to see when we are directly making a special effort to look in the direction of the object we are trying to visualize.

### CONCLUSIONS

1. There is no surgical risk to life involved in the fenestration of the external semicircular canal for the restoration of practical physiological hearing in otosclerosis when this surgical procedure is performed under the strictest rules of asepsis.

2. The amount and nature of the discomfort a patient is subjected to as a result of this surgery compares favorably with any other elective major surgical procedure and is disproportionately small when compared to the physical, mental, social and economic benefits derived from such surgery when it results in the restoration of practical hearing.

3. As a result of this surgical procedure, practical physiological hearing can be permanently restored in about 80% of properly chosen cases of otosclerosis. The success of this work, of course, will always vary with the skill and patience of the operator.

4. That hearing can be improved by fistulization of the semicircular canal has been known for many years. The problem of maintaining such hearing improvement was a technical one awaiting solution. It is for these reasons that only those who will take cognizance of the great importance that fine details of technic minutiae play in the solution of this problem, can expect to be rewarded by the long awaited results which can only be obtained in such a way because the anatomy involved is minute and does not permit great latitude in the handling thereof. There is no doubt that a simpler and less complicated technic ought to be

developed to improve hearing in otosclerosis. But, as long as one of the essentials of any technic developed will be the creation of the fenestra in the bony capsule of the labyrinth, the technic for the improvement of hearing will remain one of the most delicate and most difficult of accomplishments, because in order to create the kind of a fenestra which will result in a permanent maintenance of the maximum degree of the improved hearing obtainable on the table, the greatest amount of delicacy in creating such a fenestra required will undoubtedly meet with objections from otologists who have not been trained for such delicate surgery. This in itself will always make fenestration a difficult technic.

5. This operation should not be regarded as just another operative technic added to the list of operative procedures on the temporal bone. This operation blasts a trail for a new and different type of surgery on the temporal bone. It is based upon different surgical principles than any surgery heretofore employed for the relief of suppurative lesions in the temporal bone. The best results from this surgical procedure will be obtained by otologists who, in addition to an extensive experience in all surgery upon the temporal bone, are possessed of thorough knowledge and understanding of the surgical principles of plastic reconstructive surgery.

6. In fairness to the already successful development of the surgery for otosclerosis and for the protection of its still brighter future, no otologist, no matter how skillful a surgeon he may be, should attempt this particular operation without receiving special training in this type of surgery under supervision and guidance.

119 E. 74th Street.

## Changing Concepts of Tuberculosis During Twenty-five Years

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REST, fresh air, good food and climate were the methods recommended for the cure of tuberculosis when I reached New Mexico 33 years ago. The private sanatorium was still in its swaddling clothes and the only two institutions in the state were the Cottage Sanatorium and St. Joseph's at Silver City. These were both so-called closed institutions headed by a medical director, the former by Dr. E. S. Bullock and the latter by Dr. Hammer.

The National Tuberculosis Association had but recently come into existence and the public at large knew little concerning the disease. Dr. E. A. Trudeau had established his Sanatorium at Saranac Lake in 1884 and had demonstrated to the profession that tuberculosis was not a hopeless disease from a clinical standpoint. His work gave impetus

to the Sanatorium movement which began in the early nineties, and has since grown to its present proportion.

The climate controversy was at its height. Men east fought with men west, and when the argument was over each side left with opinions still unshattered. The western physician did not tend to clarify the situation. Each man after he established his private sanatorium issued a booklet. The march up this mountain and down that valley as opposed to some other mountain or some other valley, the minute examination of the soil and turf of one mesa as contrasted with another a few miles away, made the wanderings of the Jews pale into insignificance. After all this painstaking investigation, this careful phthisiotherapist decided upon his particular desert as the best of all possible climates in which to restore the bloom of health to

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the consumptive's cheek. And all this, mind you, when we know that all other factors being equal, one spot in the desert is as good as another, for the climatic treatment of tuberculosis.

Tuberculin, as a therapeutic agent, held the limelight for a number of years. Introduced by Robert Koch as a cure, its use was universal. As time passed, however, and clinical results were given careful study, another failure was added to the already long list. Today one rarely finds a physician who still believes in its curative value for pulmonary tuberculosis.

The question of infection and immunity was given much study, and what seemed almost a solution a quarter of a century ago has been challenged by the work of Dr. J. A. Myers and his associates at the University of Minnesota.

Formerly it was taught that adult tuberculosis was the "end of the song begun at the cradle". The moment a new-born soul emerged into this best of all possible worlds it began to inhale the ubiquitous bacillus, and from this contact one of three things happened. Either the infant received an overwhelming dosage and died promptly of a miliary tuberculosis, or the dosage was not massive enough to kill but too great to protect and a scrofulous type individual resulted. This child usually developed clinical tuberculosis in the teen age or in the early twenties, as a result of failing or insufficient immunity and the adult type of tuberculosis became manifest. Then there was the infant whose repeated infections were so regulated by Fate that a perfect immunity was developed which remained protective for life. As proof of this theory, its adherents cited the fact that 6/7 of the human race never break with clinical tuberculosis, while the other 1/7 develop the disease. They also called attention to the fact that uncivilized races, such as the American Indian, the African negro, the South Sea Islanders, and the white Esquimox were free from tuberculosis until the advent of the white man. Then when the bacillus became implanted on virgin soil the disease ran rampant, due to the fact that no immunity had been developed and the reaction was like the first massive infection in the new-born white child.

Animal experiments, too, added their proof. Take two guinea pigs, immunize one by repeated injection of living tubercle bacilli until immunity has taken place. Put the immunized animal and the control animal in a sealed box. Subject them to a spray of virulent tubercle bacilli for a given time. Afterward inject both animals with massive doses of live bacilli. The immunized pig manifests no ill effects while the control dies of a generalized tuberculosis.

It is this experiment which would seem to show that most adult tuberculosis is of endogenous origin, although, of course, there is always the possibility of sufficient massive exogenous dosage to re-infect.

The adherents of this theory felt that early infection with the tubercle bacillus was essential to

the production of immunity, and welcomed the positive tuberculin reactor. The child who grew to adult life with a negative reaction was a cause for medical and parental anxiety.

All of this evidence seemed incontrovertible until Myers' work was published. Myers contends that the human race should be spared infection if we are to conquer the disease. He claims that the first infection is a mild affair and is soon overcome. The child is no worse for the experience. Later, if re-infection takes place, it may be another story. Resistance is lessened and the disease may prove fatal. He, therefore, concludes that if all infants and children can be spared infection—can be negative reactors to tuberculin—then if contact takes place, the disease will be similar to the first infection type of childhood and will be more or less of a benign affair.

As proof of the theory, he cites his work with children at Lymanhurst and at the University of Minnesota. All are tuberculin tested. He shows that when the negative reactors among his students and nurses come in contact with infection and react positively to the tuberculin test the disease, both from clinical and x-ray standpoints, is similar to the clinical and x-ray features of first infection in childhood. Many are so free of symptoms that unless tuberculin testing is done and x-rays made, the disease may go unrecognized. The majority of this type may go on through life with no further evidence of disease, while the positive reactor in childhood who gets a re-infection in adult life may develop a serious type of tuberculosis. Much discussion and much added study has been the result of this new side light on infection and immunity. Much more discussion and much more study will be necessary before definite conclusions can be drawn.

Treatment saw no definite change until the advent of artificial pneumothorax. This method of cure was given an impetus by the epoch making paper by Dr. Mary Lapham of Highlands, N. C., before the National Tuberculosis Association in 1912. Dr. Lapham reported 23 cases, covering a period of three years' work. The results were so encouraging that the profession went wild. Dr. A. G. Shortle returned to Albuquerque with a machine and I asked him to come to Silver City to show me the technique. This he willingly did and both Dr. Bullock and I worked together for a year, when I went to Albuquerque to be associated with Dr. Shortle. This all occurred about the time the Southwestern Medical Association came into being, and whose 25th birthday we are celebrating at this meeting.

The early days of pioneer work were filled with many misgivings. For two years we worked without advantage of a suitable x-ray equipment. Lungs were over-compressed, mediastinums were shoved far towards the opposite side, diaphragms pushed downward with displacement of liver and other abdominal viscera, and many times the un-



happy patient made worse rather than better. X-ray apparatus changed the pictured. With repeated fluoroscopic examinations, lungs could be properly collapsed and from then on the results brought encouragement to both physician and patient.

Even in the early days of discouragement, I repeatedly made the statement in published articles that the method was here to stay, that it was a marked step forward in treatment, and that ultimately it would become a part of the armamentarium of every chest specialist treating tuberculosis.

That prophecy has come to pass. In many institutions throughout the country as high as 80% of patients are under some form of collapse therapy. At first, pneumothorax was the only method of lung collapse, and until intrapleural pneumonolysis came to the rescue, many failures were due to unbreakable adhesions. The cauterization of these adhesions has converted 80% of incomplete compressions into complete, thus giving cavity closure and negative sputum.

Later, crushing of the phrenic nerve was also found to convert a small percentage. This minor operation was also done where pneumothorax was impossible, and before advising more radical surgery.

Thoracoplasty finally, like pneumothorax, has won its place as a valuable adjunct in cavity closure. Our work in the southwest covers a period of sixteen years in the use of this major type surgery.

It is my firm conviction that all suitable patients should be given the benefit of some form of collapse therapy after a reasonable tryout on bed rest. This time should not exceed three months and many patients present conditions that call for immediate compression treatment.

Having traced the gradual change from long drawn out rest, food, fresh air and climate, to the surgical treatment of tuberculosis, I shall now rid myself of a few homely truths.

First of all, I congratulate myself on my age. I realize that the day of the tuberculosis specialist in the southwest is over. At least, the cream has been separated from the milk. We in the desert get the skimmed variety. Up to the crash of 1929, money was plentiful. The butcher, the baker, the candlestick maker, spent his along with the millionaire. Private sanatoria were filled and were happy with a long waiting list. People believed in climate and

were willing to pay for the luxury. In fact, buying luxuries in those days was proof conclusive of the fatness of one's pocketbook. Patients bought climate the way they bought Packards, Pierces and Cadillacs. No one considered a commodity valuable unless the cost mounted into the high brackets. Unless a doctor in private practice charged a fat fee, he was looked down upon. The masses wanted the best and were willing to pay for it. Today we see a different picture. Through the passing years, State, County and municipal sanatoria were being built, and after the depression hit and Roosevelt became big-hearted, more and bigger ones were added to the already mounting list.

People who formerly flocked to climatic resorts found their pocketbooks too flat to make the venture. The only ones who did not fear the desert were the men and women on relief. They could live one place as well as another. Needless to say, they are a medical liability rather than an asset.

The private sanatorium, east as well as west, was deserted for the public institution. Examinations were made by clinics instead of private physicians. Thus the private sanatorium and the private practitioner saw the clouds gather and the storm break.

Collapse therapy added its mite. Patients were cured at home before they had a chance to give climate a thought. If the public institutions were full, out patient departments and clinics started the collapse treatment, and many were restored to health without even entering an institution.

This situation is here to stay. Tuberculosis is a State disease. The future of the private sanatorium and the tuberculosis specialist lies only in past memories. True, those of us who have lived through all these years may be able to keep the home fires burning. A few private institutions may struggle on until the old medical director is buried. The fact remains, however, that a new era has been born, and with it has come a marked change in the economic treatment of tuberculosis. Climate is not the factor it once was. Collapse therapy has pushed it from the position it once held and it can never stage a come-back. The old tuberculosis specialist will die and be buried, to be replaced by his younger colleagues who are much better able to face the present situation with tolerance and understanding.

"We who are about to die salute you!"

221 W. Central Ave.

## Thirty Years Observation of Intestinal Obstruction

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INTESTINAL obstruction is, of course, too great a field in surgery to be discussed in any one thesis. For this reason this paper will be confined

largely to our own personal observations and to phases of mooted interest in this subject.

The relief of an intestinal obstruction may be as simple as a simple appendectomy and again it may be one of the most difficult conditions to deal

with in surgery. In this communication we propose to discuss mainly dangerous and difficult cases, often complicated by a diffuse peritonitis.

For the purposes of this essay we shall limit ourselves to a brief discussion of some interesting points in complete and incomplete intestinal obstruction.

The diagnosis of complete intestinal obstruction is usually easy and not intended for discussion here, but it is well to remember that the closer the obstruction is to the stomach the sooner nausea and vomiting occur. From these high obstructions distension and peritonitis rarely occur early because the small amount of intestine involved is decompressed by vomiting. These very high obstructions will go on for weeks or even months without any fatal systemic stresses. The patient loses strength and weight because almost as soon as he begins to eat he becomes nauseated, then vomits. The process then becomes one of starvation, and it is rare that the patient would die of peritonitis.

Excluding duodenal obstruction the highest obstruction we have ever seen was about  $3\frac{1}{2}$  feet below the pylorus, and the second highest about 7 feet below the pylorus. The first mentioned was of about 10 days duration and the latter of many months duration. The latter was emaciated, the former had only lost some weight. The latter was greatly distended in the upper abdomen and was flat below; the former was not distended at all, and neither had any peritonitis.

Incomplete obstruction may on occasion be quite difficult to diagnose. This form of obstruction, these days, is most commonly due to post-operative adhesions. These adhesions are not due to the operation, *per se*, but to the inflammatory process present at the time of operation. Nearly all such adhesions followed an operation in which pus was encountered within the abdomen or in which the inflammatory process had passed the bounds of the disease for which the operation was performed.

Perhaps the most difficult feature in incomplete intestinal obstruction is to tell what cases should be operated. The cases that should be submitted to surgery generally give a history of at least one former operation. That operation was most generally for a ruptured appendix, a pelvic infection, or any abdominal operation in the presence of pus or widespread inflammation. The patient has increasingly severe indigestion with gas pains generally over the lower abdomen. These gas pains are intermittent and often quite severe. The severer the gas pains and the sooner they come on after eating the more necessary it is that the patient have surgery. Frequently these patients will tell you that they have "knots" or "lumps" that they can feel in the lower abdomen, when their indigestion is quite severe. In thin patients we have sometimes seen just such tumors through the abdominal wall. You may be sure that such peristaltic waves are distending the gut above a more or less acute kink. With a stethoscope you can

hear the gas and fecal contents gurgling through the partial obstruction below. There is nearly always nausea present, and occasionally vomiting. The more persistent the nausea, the more urgent is the demand for surgery. Persistent vomiting should never be allowed to occur, because this means complete obstruction or near complete obstruction.

All patients with the above symptoms should be hospitalized, and all should be operated as soon as the patient is in the best possible condition for surgery. Those cases with milder symptoms, and with whom the bowels can be moved daily, may be temporized with, but not otherwise. No patient with pain within the belly should ever be given a purgative until after it has been definitely determined what the pain is due to. With rare exception, enemas may always be given without danger to the patient. Whereas purgatives may be fraught with danger and may cause the death of the patient.

When there is complete obstruction an early diagnosis is imperative, while in incomplete obstruction the earlier the physician can determine the necessity for surgery the greater is the chance of surgery obtaining a permanent cure.

#### PROGRESS IN ABDOMINAL SURGERY

In looking back over 30 years of our personal observations it is evident that progress in the surgery of grave abdominal conditions has been a steady, healthy evolution rather than sudden radical changes.

The major problems in treating grave cases of intestinal obstruction have always been the same. These are: 1, hypohydration; 2, abdominal distension; 3, pain, restlessness and tenseness of the patient, and 4, sustaining the patient until he can take food by mouth.

*Hypohydration*—We can see that failure to appreciate hypohydration was the main cause of a comparatively high death rate in the first decade of this century. The hypohydration was not appreciated; the insistent call to relieve the patient's thirst after any serious operation was appreciated. It was also appreciated that to prevent suppression of the urine the patient must have fluids. To meet these very apparent demands 40 years ago, some surgeons filled the abdomens with normal saline before closing, noting that these patients made an easier recovery. Personally, we gave every patient, on return to bed after laparotomy, a pint of warm black coffee instilled into the rectum. This was followed every 3 hours by an 8-ounce instillation of tap water by rectum until patient was able to take water freely by mouth. This method worked very well, and it was gratifying to see how well the kidneys functioned after abdominal section, and how easily the patients recovered compared to our hospital interne days.

The next great step towards combatting hypohydration was the Murphy rectal drip, which came into general use about 1910. This served very well for all ordinary laparotomies, but in grave abdominal conditions with diffuse peritonitis and se-



vere distension it was totally inadequate. To meet this extreme demand parenteral administration of fluids has now, for several years, come into general use with the greatest benefit. So far as we know, Hendon's "venoclysis" first met the demand for the parenteral administration of large quantities of fluids by the drop method. Hendon's original technic exposed and opened the vein with the introduction of a canula, through which the desired fluids were administered. Now this drop technic, which should always be used, has been simplified by passing a needle into the vein without open exposure.

**Abdominal Distension**—Little progress was made in relief of this most dangerous feature of general peritonitis, until Kanavel introduced his duodenal tube in about 1916. Before that time all we could do was wash the stomach at intervals through a rubber tube that looked like a length of a small-sized garden hose. When Kanavel introduced his small-sized duodenal tube a great step had been accomplished in treating this dreaded complication. The small size of this tube permitted it to be passed through the nares into the stomach and duodenum, and left there for hours or days as required. This constant siphonage of the contents of the distended intestines did much to relieve the intrainestinal stress, and so saved many thousands of lives. When Wangansteen added constant suction to the Kanavel tube, its effectiveness was doubled. With this combination we now have a fairly satisfactory method for life-saving intestinal decompression.

The Miller-Abbott double-lumen intestinal tube has now been added to the above to combat intestinal compression. This 10-foot double-lumen rubber tube looks like the ordinary duodenal tube and is the same size. With this tube the entire length of the small intestine can be decompressed. The tube and the idea looks excellent, but so far as we have had only two cases in which the tube was used, and consequently know little about its practical use.

**Pain, Restlessness and Tenseness**—Every patient with general peritonitis has pain and is tense and restless. This must be relieved because the restless patient is headed straight for destruction. Here our old friend and enemy, morphine, comes to the rescue. It relieves the pain, quiets the restlessness and puts every muscle at rest. It should be given regularly at 3- or 4-hour intervals in sufficient quantities to keep the patient quiet and relaxed.

**Parenteral Feeding**—The addition of dextrose to fluids for parenteral administration to prevent or relieve hypohydration has been a godsend. It permits us to carry our patient through days or even weeks until food can be given by mouth. Dextrose calories administered directly into the blood in the isotonic 5% concentration mean far more than twice the same number of calories taken into the alimentary canal.

Dextrose was certainly used for parenteral feeding as early as 1905, but it required 25 or 30 years

of evolution before it came into general use as now practiced.

### ANESTHESIA

The choice of an anesthetic in these grave cases is of the greatest importance. Personally we use subarachnoid anesthesia in nearly all these cases, and *always* when the patient is *very sick*. So far as we are concerned, there are no contraindications for its use. It has many advantages over any other form of anesthesia. It gives perfect relaxation and there is little or no shock following its use. The intestines lie perfectly still within the abdomen while you are operating and are not constantly popping up into the wound as is so often the case with gas or ether anesthesia. The quietness of the intestines enables the surgeon to handle only the diseased gut and so avoids spreading of infection. Pads, or rubber sheets, to hold back the intestines, are rarely required. So long as the patient is still living and you can accomplish anything by operating, you can perform that operation, without injuring the patient, with spinal anesthesia. We have saved several patients in just such extreme condition by its use.

### OPERATION

Make a midline incision because there is no other incision that offers so wide a field of vision. It can be made high or low and as long as necessary, and may always be closed to insure against a post-operative ventral hernia. It can be reopened when necessary, again and again, and still be closed securely. This can be said of no other abdominal incision. If there has been a previous operation, reopen through the old scar, and not beside it, as is so often done.

### CASE REPORTS

**Case 1**—Mr. C., white, age 20, was admitted to the hospital Sept. 5, 1931. He gave the history that he had been operated on a year before for an acute appendicitis. The appendix had ruptured and drainage was used. Following a prolonged recovery, and at varying intervals during the succeeding year, he had had 4 different intestinal obstructions. He had been reoperated each time. At the fourth obstruction a section of ileum had been removed and a Murphy button anastomosis made.

Examination of this boy Sept. 5, 1931, showed that he again had a complete intestinal obstruction. He was very sick and had a distended abdomen. He had 5 operative scars, made parallel with each other, and extended from the regular McBurney incision site almost to the umbilicus. The right rectus muscle had wasted away over the involved area, and a large ventral hernia resulted.

This boy was given spinal anesthesia, and the abdomen opened through one of the medial scars. The abdominal wall consisted of skin, some scar tissue and peritoneum only.

The obstruction was due to adhesions of about 3 feet of ileum, massed about the site of the Murphy button anastomosis. Besides the obstruction adhesive mass, there were other adhesions everywhere.

All adhesions were carefully separated and the abdomen thoroughly cleaned up. Then we did a plastic operation to close the boy's hernia as well as possible. There is nothing more likely to start new adhesions within the abdomen than a ventral hernia.



This boy was carried on dextrose solution, and the routine outlined here, for 4 days, and then made a nice recovery. He did well for 2 years, during which time we followed his activities with a great deal of interest. After this period he went to California and we lost trace of him.

This boy will always be a weakling on account of his weak abdominal wall. Had his surgeon made a midline incision at the first obstruction, and clung to that one incision for each succeeding obstruction, he could have still have a good, strong abdominal wall. Further, a strong abdominal wall would have greatly reduced his liability to a return of the adhesions.

In incomplete obstruction cases, the pathology will nearly always be found to be due to intestinal and omental adhesions. Every single intestinal and omental adhesion must be carefully separated until every inch of gut is entirely free. A careful search of the abdomen should be made for any pathology that was either overlooked at the former operation or may have occurred since then. All pathology found must be removed because the patient will not recover health unless this is done.

Where there is no peritonitis and the patient is in fair condition, the recovery is easy, and the great majority will stay well. If even one bad kink is left, the whole condition is liable to return, as bad or even worse than before. Patience, gentleness and thoroughness are the price of success in these cases.

The most difficult of all complete intestinal obstructions to deal with are those that were incomplete and have for some cause become complete. If the patient is in bad condition and the obstruction is due to some one coil of gut or other condition which can be easily and quickly freed, this should be done and the abdomen closed. No wise surgeon will subject his patient to greater danger than necessary, but it is well to remember that the complete operation frequently has to be done later. Often in these cases you will find the obstruction due not to a single coil or band but to a whole 10 or 12 feet of matter gut. In these cases we separate every adhesion just as we do in the simple cases, even if we have to resect a part of the gut. It is surprising how many will recover when so treated. Even under the most adverse circumstances careful surgery will at least occasionally be successful, as the following cases show.

*Case 2*—Mrs. S., white, age 57, was admitted to hospital Jan. 31, 1937. We had never seen the patient professionally before. There was the following pertinent history.

Many years ago she had an appendectomy. Several years later she had another abdominal operation which proved to have been a hysterectomy. Five years prior to admission to hospital she was operated for an intestinal obstruction. Following this operation she had severe indigestion and gas pains daily after eating anything. For a month prior to hospitalization she had had continual abdominal pain and great difficulty in getting any bowel movement at all. For three days before admittance to hospital she had no bowel movements and had constant pain, nausea and vomiting.

Examination revealed a typical, very late, complete intestinal obstruction, due to adhesions. The abdomen was badly distended and patient in poor physical condition.

After a hasty preparation, the patient was taken to surgery. Spinal anesthesia was given and the abdomen opened through the old midline scar—one of three. The entire lower abdomen was one mass of adhesions, involving nearly all the small gut, the bladder, rectum, sigmoid colon, and omentum. The adhesions were so dense that every adhesion had to be cut inch by inch. Even the folds of the mesentery were adherent to each other. Twelve to 14 feet of small gut was in one mass—or better, mess—and so rotten that six holes appeared in the gut in spite of the most careful separation. Further, there was 18 inches of ileum—beginning 1 foot above the ileocecal valve—which lay in the deep pelvis. It was attached to bladder, sigmoid and apparently to the stump of the removed uterus. This 18 inches of gut was gangrenous and had to be cut away, and a lateral intestinal anastomosis was done. Really it looked hopeless to save the 12 feet of gut above, but such long resections are so fatal and give such unsatisfactory after-results that we decided to try to save the gut. Along the removed gut, and at the site of almost all the holes above, were small abscesses.

The whole thing looked so hopeless that many times we felt like giving up, but we stuck it out until every hole was closed after the rotten gut had been trimmed from its margins. Further, every adhesion within the abdomen was carefully separated. The work within the abdomen required 2½ hours, and then 1 hour doing a plastic closure of a weak abdominal wall on account of three separate incisions for previous three operations.

The patient was kept on continuous drip of dextrose solutions for 6 days. The bowels moved on the sixth post-operative day, and thereafter regularly. Also on that sixth post-operative day the abdominal distension mostly disappeared.

On the eighth day a fecal fistula developed, and closed in about a week.

On the fortieth post-operative day a fecal fistula developed into the urinary bladder, and both feces and oil—given by mouth—appeared in the bladder. Doctor Multauf did the cystoscopic work and reported the fistulous opening 1½ inches above ureteral orifice on the right side. This fistula healed in a week, but there were minor leakages two or three times during the next month, when it permanently closed. No treatment for the fistula was given except a retention catheter in bladder for 1 week until fistula made its first closure. After that, observations only were made.

This patient, in spite of all the complications, made an easy recovery, after the first 5 days, and has remained perfectly well since recovery.

*Case 3*—Mr. G., (sent by Doctor McClane, Roswell), white, age 51, entered hospital May 12, 1937, on a stretcher. He was a very sick man. He had a bad mitral regurgitation and a right chest effusion with heart and trachea thrust perceptibly to the left. He was struggling for breath like a pneumonia patient. Temperature was 101 and pulse 120.

His white blood count was 9,600, with 65% polymorphonuclears. Wasserman, Kahn and Eagle tests were negative. Blood culture negative. Urine was essentially negative. His abdomen was distended but not tender. He had made over a 200-mile trip by ambulance to enter the hospital.

This patient's chest and heart condition was so bad that he was turned over to the medical service of Doctor Awe for treatment. Doctor Awe treated him for 7 days, during which time he was nauseated and vomited frequently.

This man gave the history of his illness as a very insidious onset, beginning about 23 days before entering hospital. The onset was without any pain, but a slow abdominal distension and a feeling of general malaise. Due to gradual abdominal



distension, patient said he thought he was getting fat. He had fever and gradually grew worse and worse until he was sent to the hospital. History of attacks of appendicitis years ago, but never was operated.

One of the peculiarities of this case is that he said he never had any pain at any time.

May 18 a barium enema was given and the fluoroscope showed complete obstruction in sigmoid flexure. A skiagram showed the same obstruction and also barium that had been given in Roswell 12 days previously.

On May 20 it was evident that he had developed a complete obstruction, and he was taken to surgery.

This man was the worst possible surgical risk. Spinal anesthesia was given without any disturbance to patient's shaky heart or manifestation of shock.

**Operation**—Midline incision. Small intestines greatly distended above a mass of adhesions in pelvis extending from sigmoid to cecum. The pelvis was full of various pockets of stinking dirty pus—at least 8 ounces in all. These put pockets were opened as the 8 feet of ileum involved was carefully separated from its mass of adhesions. The first complete obstruction was a kink of ileum lying beneath the sigmoid and covering the largest pocket of pus. This was the obstruction shown by barium enema.

In spite of the greatest care in separating adhesions, four holes were torn in the gut. These were closed with No. 0 chromic catgut. To prevent intraintestinal stress throughout this semi-rotten gut, a Pezzer catheter was put in the ileum 6 inches above ileocecal valve.

From the nature of the pathology found it was evident that the appendix was its origin, but no appendix was found—it had sloughed completely away. To be sure that no part of the appendix was left within the abdomen, the parietal fold of peritoneum was incised and the cecum was turned up, giving perfect exposure of the posterior cecal area, but no part of the appendix was found.

This man was carried on intravenous dextrose solution for 7 days. Duodenal tube decompression was continued the same length of time. Every adhesion was relieved and every kink in gut straightened before abdomen was closed.

In this case the Pezzer catheter in the ileum worked perfectly and without any fecal leak around catheter at any time. No fecal fistula developed from the sutured holes in the gut. The catheter was removed on the thirteenth post-operative day and the opening in the gut closed in 24 hours.

This man went home on the twenty-first post-operative day with his right lung effusion all cleared up and his heart pretty well compensated. Within 6 weeks he was back at work and has remained well since. We keep in constant touch with him.

For a number of years now, we treat all these dangerous cases just as we do our acute diffuse peritonitis cases. As soon as the patient is put to bed, a 5% dextrose solution is started intravenously, at 70 drops a minute. A Kanavel duodenal tube is passed into the stomach. If there is any distension, Wangenstein suction is added at once.

Each 24 hours we give from 3,000 to 5,000 cc. of 5% dextrose intravenously, as the patient's condition seems to demand. The first 1,000 cc. is

given with normal saline and all the rest for the entire 24 hours with distilled water. These injections of dextrose are given at regular intervals and require from 3½ to 4 hours to administer. When the patient is very sick indeed, we frequently administer the dextrose without intermission, during the whole 24 hours, and so continue until the patient is considered in good condition. When the intravenous dextrose is administered throughout the whole 24 hours, the speed of flow is slowed to 40 to 45 drops per minute. We have frequently used 10% solutions of dextrose, but the increased food value does not seem to be necessary and it offers difficulties in administration that the isotonic 5% solution does not.

Some patients' veins are very difficult to enter with a needle, and such patients may be given 1,000 to 2,000 cc. of dextrose by hypodermoclysis in either normal saline or distilled water. It should be given slowly by the drop method. Hypodermoclysis serves very well, but the patient with good veins is a better risk.

Sufficient opiates are given at regular intervals to thoroughly relax the patient and keep him quiet. We nearly always use pantopon, because it apparently acts just as well as morphine and is practically non-habit forming, and is consequently more easily withdrawn at the end of a long illness. In old people we usually use morphine, because it does seem to be more stimulating and seems to act better in such cases.

Wangenstein suction decompression, intravenous dextrose and sufficient opiates are given consistently until the patient's bowels move. This usually occurs in from 6 to 9 days after operation. The patient usually begins to pass gas 12 to 24 hours before the bowels move.

We give no stimulants and no prostigmine or other peristaltic stimulants until patient is passing gas freely by bowel. If given sooner, peristaltic stimulants shock the patient and do harm.

Blood transfusions, if required, should be given in massive doses or often repeated. Giving a pint of blood to one of these desperately ill patients is somewhat like shooting a pop-gun at an elephant.

We drain all our cases in which frank pus is present.

With this systematic method of treating these grave cases, our mortality has dropped to close to 10%. This is excluding moribund cases, in which cases one does well to save 10%.

Mills Bldg.

**Anthraco-Silicosis**—Statistics from White Haven Sanatorium, Pennsylvania, reveal that tuberculosis of the intestine was found in only 19% of the cases where anthracosis and pulmonary tuberculosis were associated as contrasted to 51% where the pulmonary tuberculosis was uncomplicated by silicosis. This may be due to the extreme pulmonary fibrosis present in these cases preventing the spread of the tubercle bacilli. In early or moderately advanced cases of silicosis the rate of intestinal involvement is the same as in the cases which do not have silicosis. Charr, R. and Cohen, A. C., *Am. Jour. Med. Science*, 1938, 196.

Case 2 is reported especially because of the fecal fistula into the urinary bladder and the extreme difficulties encountered.

Case 3 is reported especially because the appendix had sloughed away before this sickness began; yet the pathology was plainly of appendix origin.

Cases 2 and 3 are also reported because we know how lucky we were in having them get well.



## Cancer Problems Twenty-five Years Ago and Now

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**T**WENTY-FIVE years ago research workers were seeking "the" cause of cancer. Cohnheim's theory of the presence of misplaced embryonic tissue with prenatal or postnatal cell rest was regarded as universal in scope and was quite generally accepted. Investigation has revealed an extremely wide variety of tissue rest and abnormalities which form the basis of cancer; consequently the scope of our present theories, though not universal, has been proved today to be much wider than some of the early critics imagined. We know now that the Cohnheim theory does not apply to many of the major forms of cancer, for they do not arise from embryonal cells. Again, we are certain there is no specific cause for cancer; rather, there are many causes. Cancer is not a single disease; it is a group of diseases with many phases but with the common aspect—the destruction of life.

We are still in agreement with the determination that chronic irritation is the most important of all precancerous conditions and the most potent influence in the development of cancer.

Twenty-five years ago many contended that cancer was a disease of disordered nutrition; we have proved that the effect of diet lies only in the lowering of the general body resistance through the absence of sufficient minerals and vitamins.

Again the influence of heredity on the occurrence of cancer was generally believed to be fairly certain, although it was not understood. Now we know the vast majority of cancers are not inherited. Some of the less common tumors, however, are strongly influenced by hereditary tendencies, i. e., glioma of the retina, neurofibromatosis, and so on. The susceptibility residing in peculiar conformation of the organs is likewise a matter of heredity. Whatever the mode of inheritance of the cancer tendency, the condition inherited seems to be a poorly balanced cell system or cells with a high potentiality of malignancy. The condition responsible for the initiation of this process, likewise inherited, may be an endocrine imbalance. The study of cancer in animals, particularly mice, has demonstrated that heredity or genetic influences play a part in the development of cancer in these animals. There are, for example, cancer-susceptible and cancer-resistant strains of mice.

Twenty-five years ago trauma was accepted as a cause of cancer; now it is believed that the traumatic origin of cancer can not be established in a majority of cases and certainly there is no justification for ascribing a single trauma as a cause of cancer unless it can be scientifically proven.

Again, in the past Roentgen ray cancers were

frequent. The tragic end of many x-ray and radium pioneers attest to this fact. Now the occurrence of such cancers is rare, owing to improved machines, more perfect technique, and proper screening.

It must be remembered at that time much research in cancer had been done, and definite progress was being made. Of course, the biology of the cancer cell was not so well understood. Today we know that it is a cell with a capacity for unlimited or uncontrolled growth. Whatever may be the contributing cause, malignancy once acquired becomes a fixed character of the cell; the continuation of the condition is not dependent on the factors which were responsible for its development. Attempts to establish fundamental differences between normal and malignant cells of the same tissue type have failed to bring out any striking variation in chemical make-up, enzyme contents, metabolism, or structure. Experiments show that a living body is capable of building up resistance to cancer. What this resistant substance may be is not yet known to scientists.

### CARCINOGENIC AGENTS

Twenty-five years ago the known carcinogenic agents were few in number, and their action was not well understood. Now there are more than fifty chemical carcinogenic agents, colantherine being the most active. Carcinogenic agents appear to start a process which may lead to malignancy; but once the process is started, the agents apparently play no further role in the picture. Examples: X-ray cancer, cancer of the skin from external application of coal tar; the disappearance of active virus from papilloma before malignancy appears. In fact, the malignancy may often occur months or even years after the exposure to the carcinogenic agent. (2) Almost all if not all, classes of cells may be rendered malignant under the influence of one or more agents. Not only may this be concluded from the fact that among naturally occurring tumors practically all types of cells are represented, but malignancy has been induced experimentally in skin, connective tissue, liver, lungs, stomach, gall bladder, kidney, testicle, muscle, bone, bone marrow, lymphoid cells, the uterus, mammary gland, and other tissues. It may be deduced from this that malignancy is a universal cell potentiality. (3) The expectation that with the method of inducing tumors it would be possible to trace the transformation of normal cells into malignant cells has not yet been realized. In the area of tissue disturbance induced by the agents a new race of cells appear quite suddenly with no apparent graduation.

### EARLY DIAGNOSIS

At that time the early diagnosis of cancer was also stressed, dependent upon a painstaking his-

tory, a complete physical examination, a biopsy, possibly a frozen section, and upon the aid of the x-ray. Now we have in addition Dr. A. C. Scott's shadow test, the combined barium colon enema and air insufflation, transillumination and gradings of malignancy. As a result of increased knowledge both pathologic and roentgenologic diagnosis are also more accurate and dependable. The clinician and the laboratory worker must cooperate to the fullest extent that we may obtain a correct diagnosis and may give a proper prognosis. Laboratory diagnosis covers a wide field; it requires a keen knowledge of the subject in order to properly interpret the findings.

A quarter of a century ago the ferment diagnosis (Abderhalden) for cancer was receiving considerable attention. The technique is intricate, and the outcome of the test depends upon the scrupulous observation of each and every detail, however minute. Now we have more than fifty methods of sero-diagnosis, but most of these require such a difficult technic, and the outcome is so frequently conflicting, that these methods have only a scientific interest. Since cancer in its early state is usually a local disturbance, and the humoral alterations are generally secondary, it is hardly probable that we are near the discovery of a precocious-sero-diagnosis. Certainly none of the methods to date have proved so reliable that diagnosis can be based on it, nor can negative reactions on the other hand be necessarily diagnosed as negative.

#### TREATMENTS

Twenty-five years ago one of our most famous surgeons wrote, "The prophylaxis of cancer depends on the early removal of all precancerous lesions and sources of chronic irritation". This surgeon had a gastric ulcer at that time. For many years he had operated upon thousands of cases of gastric ulcers, curing the disease and preventing cancer. Eight months ago he was operated upon for a perforating lesion of that ulcer; it was found to be malignant. A few months later he died. The whole world grieves because of the death of this great surgeon. Now we know, as he knew then, that the ulcer should have been cured immediately as a prophylactic measure against cancer. Today we stress the careful study of all suspicious cancer symptoms and the early institution of intensive treatment. The problem of reducing cancer mortality has become a major problem in public health and preventative medicine.

In those days an operation, whenever available, was the choice treatment of cancer. This applied not only to all cases in which an operation offered a hope of radical removal of all traces of the disease, but also to those borderline cases in which radical removal was excluded by anatomic conditions. In this latter class, after operation, the site was subjected to intensive Roentgen irradiation. The majority of the surgeons then were of the opinion that in all operable cases the knife was the best agent for combatting cancer and agreed that radi-

ation should be used in inoperable cases. Nor have we today any curative agents for many major cancers, that can compete with surgery. With careful preoperative preparation, improved surgical technique, and meticulous post-operative care of the cancer patient there has been a reduction in the immediate operative mortality with a more comfortable convalescence; likewise many more cases are being permanently cured.

Twenty-five years ago the Percy treatment of inoperable cancer was held in favor by quite a large number of surgeons. Percy used an electrocautery with a controlling rheostat. Percy demonstrated that by this means heat penetrated deeply into the cancerous growth, and by a slow cooking process, it destroyed cancer cells beyond the coagulated tissue without destroying the normal structure. Many surgeons resorted to the treatment. Now Percy is one of a few who continues this form of treatment. He is still an active cancer surgeon at eighty years of age.

In those days we were proud of our x-ray machines. The high-vacuum hot cathode type of x-ray tube was used. Of course, the curative effect of x-ray was vigorously assailed by many authorities; few medical men of experience had faith in its use. The large proportion of recurrences showed that previous dosages were inadequate for all but superficial lesions. Efforts to increase the dose led to disastrous results, to destruction of tissue, to prolonged and painful ulceration, and to eventual recurrence. The proper x-ray dosage and its administration was then an unsolved problem. It was at this time, however, that surface application and the insertion of radium tubes in the cervical canal was begun. Some used repeated applications of light filtered radium over a considerable period. Today our important and essential progress has come through a better understanding of the nature of the disease to be treated. Great advances have also come in the field of engineering with the construction of more durable, more powerful and reliable apparatus. Many new x-ray devices have materially increased the efficacy of the rays. The accuracy of the x-ray machine, together with the increased knowledge of the proper dosage and the best methods of delivering an effective and safe dose, insures maximum therapeutic results. It is even claimed by good authorities that the super-voltage x-rays are curing human cancer that showed no improvement under milder rays. Nevertheless, it is still to be proved that these cure any better than the lower-power rays. True, they penetrate deeper and do not burn the skin so much, but biological "guinea pig" tests have failed to show any curative difference. The tube of the million volt outfit and the two hundred-fifty thousand volt x-ray are the same in principal. Chaoul's low-voltage, short distance roentgen ray therapy is now being used with very good results. This particular apparatus is essentially limited to a voltage range of 50-60 kilovolts. The tube used is long and slender, about the size and proportion of a child's



toy horn. The rays are produced at the tip, in the area that would be the mouthpiece of the horn. The metal disc at the end of the tube is placed directly against the tumor, or at most not more than five centimeters distance. This tube is so made that it can be inserted into most of the body orifices or through surgical openings. Our improved technique of radium therapy under proper screenings and with proper calculation of dosage has given us the desired results without the after effects of over-radiation. Now with interstitial radium and radon seeds, the source of radiation can be placed in the tumor itself, and good results can be expected.

Twenty-five years ago many surgeons treated cancer of the breast by removal of the ovaries; now the ovarian function is destroyed by radiation to stay the ravage of cancer, and I have seen some very favorable results following this treatment. And the results of experiments with new methods of radiation, artificial radioactive substances, and neutrons are awaited hopefully.

Now we have only surgery, x-ray, and radium as curative agents against cancer. Technical improvements have made all of these agents more successful in combatting the disease and new procedures being used now result in the cure of cancerous conditions which were not attempted twenty-five years ago; such as those involving the brain, larynx, lungs, and thoracic-esophagus.

#### CANCER RESEARCH

Twenty-five years ago I received training in the cancer problems at the Memorial Hospital for the Treatment of Cancer and Allied Diseases in New York City. It had a new home at that time; it was well equipped, and it had the best cancer experts obtainable; it was then as now the outstanding cancer institution of the world. Patients received careful examinations and expert treatment; those of us who were working in the institution felt we were receiving "the" best training in cancer problems. Now its new building has been completed and equipped with the most modern appliances to deal with the problems of cancer. As seen today the institution in its acknowledged preeminence in the cancer field of the world is an amazing evolution. Here graduate medical education is given to every visitor, even though he may be there only for a day or a week. A three years graduate medical course is given to physicians preparing to make the cancer problems their life's work. The Federal Government has also set up a fellowship system under the National Advisory Cancer Council of the National Institute of Health of the Treasury Department that qualified men may learn the cancer problems of today at the expense of Uncle Sam.

Twenty-five years ago cancer research received little financial encouragement; now millions of dollars are donated, both by the Federal Government and by private philanthropists, to finance important scientific investigation. As a result of an act passed by Congress, \$750,000.00 was appropriated

for the National Cancer Institute now being built at Bethesda, Maryland; it will be ready for use within this year. In addition \$700,000.00 is to be appropriated annually for expenditure in the campaign against cancer; of this \$400,000.00 was made available, \$200,000.00 for the purchase of radium. The other \$200,000.00 is for private cancer research projects. The government owned radium is loaned to various hospitals which are properly equipped to treat cancer patients and for research work at the National Cancer Institute.

#### SPREAD OF KNOWLEDGE

It was just twenty-five years ago that a movement of widening scope was set in motion by the newly organized American Society for the Control of Cancer: (1) to educate the laity to recognize the early signs of the major forms of cancer and to seek medical advice quickly, (2) to educate physicians to recognize the significance of these early signs and symptoms in their relationship to cancer, (3) to see that proper facilities for diagnosis and expert treatment of cancer were made available for everyone. In the beginning the medical societies in many states would have nothing to do with this program. But now, with cancer committees in every state in the union, it must be admitted that the present cooperation of the medical profession in the education of the laity and physician, is one of the triumphs of the Society. The American College of Surgeons assumed the task of providing facilities for the diagnosis and treatment of cancer, by establishing 307 approved cancer clinics in the larger hospitals of the United States and Canada. This approval by the College means that representatives of the College have visited these hospitals, have consulted with the members of the staffs and administrators, and have furnished to the College a summary of the activities of each hospital with regard to the facilities for the diagnosis and treatment of the cancer patient. The efforts of the medical profession and the laity to control cancer has never been so well organized nor so active as it is now. Great progress has been made in the cancer problems as here-to-fore enumerated, but in spite of all of this we face a very serious cancer problem, i.e., the ever increasing death rate from cancer. Year by year, there is a substantial increase both in the number of deaths and the death rate from cancer as shown by the Department of Commerce, Bureau of the Census, Washington.

#### DEATH RATE

Twenty-five years ago the Bureau of the Census reported 42,464 deaths from cancer, with an estimated death rate of 76.9 (per 100,000 estimated population) in the registration states. Now the latest report of the Bureau of the Census is for 1937. There were 144,774 deaths from cancer, with an estimated death rate of 112.0 (per 100,000 estimated population) in the continental United States. These statistics are indeed disconcerting. Is this

an increase in cancer or merely an increase in accurate diagnosis? It is my opinion that there is an actual increase, therefore I say, now we have a

real cancer problem: how can we reduce this increasing mortality?

15 East Monroe.

## One-third of a Century of X-ray Progress

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IT must be remembered that the science of roentgenology is but forty-three years old, with many vital and important developments and discoveries yet to come. But in this short time, Radiology, the baby of all specialties, has become a fundamental part of medical knowledge. No other specialty or agent has so vitally affected and interwoven itself into modern medicine as has radiology.

I speak from personal experience when I trace the development of this all important specialty. It has been my good fortune to "grow up" with radiology, for it was the year I entered medical school, 1898, that Madam and Pierre Curie discovered radium—and just three years earlier, x-rays were discovered by Professor William Conrad Roentgen of the University of Wursburg. My entire medical life has been closely associated with the development and application of these two agents.

X-ray practice in the Southwest has developed from the crude glass plate static machines of the early nineties to present day diagnostic and therapy equipment mainly because the physicians of the Southwest have very generously supported their laboratories and insisted upon the latest and most modern equipment for their patients and research. The development of x-ray laboratory equipment is quite forcefully illustrated by the following lines taken from the issue of the *Journal of the American Medical Association* for March 7th, 1896, which reads, "The electrical apparatus is so expensive, \$100 and upward, that few surgeons can use it as yet in their private practice." Those of my colleagues who are actively engaged in x-ray diagnosis, therapy and research will bear me out when I say that a modern laboratory set-up costs at least \$20,000.

### DEVELOPMENT OF X-RAY

But now, go back with me to 1903 and the first practical uses of x-ray. Like many others, I began my work with a glass plate static machine. Well do I remember spending my Sundays cleaning, polishing and drying out the calcium chloride so as to have everything in shape to work Monday morning—and believe me, if it did work, we were happy. There were many times when the output of high potential current was disappointing. The gas tubes of the early years with their solid platinum anodes were a source of great worry. But lucky indeed were the men who had a good supply of these tubes stored away as relics when, during the World War platinum became so valuable. When machine

and tube were just right, it was possible to develop a current capacity of one hundred kilovolts and about one milliamperere, quite a contrast from the five hundred milliamperere machines of today. There were of course no meters or way of determining output.

Following the static machines, the induction coil was used as a source of energy. Our first induction coil, a 20" Scheidel, was purchased in 1905. With this we got our first x-ray burn, and that in making a picture. From that day to this we have been on guard against a repetition. We were still working without any means of measuring the output of x-ray and I frequently looked at my hand with the fluoroscope as a guide to the length of exposure.

In 1907, Snook introduced the cross-arm type of rectification which made it possible to obtain an energy output of one hundred kilovolts and one hundred milliamperes. In 1915, meters for measuring current were introduced into the circuit. In 1914, the Kenotron hot cathode type valve tube was introduced and this is the type of rectification in use today. It permits the high potential current to flow only in one direction. On some therapy machines a hot cathode suppressor type tube is used on the primary circuit. There have been two principle types of x-ray tubes, the early gas tubes and the hot cathode tube developed by W. D. Coolidge in 1914. This is the tube in general use today, and the ability to control and regulate the output of this tube has placed the use of x-ray on a scientific basis. It is now possible to duplicate results of one laboratory in every other laboratory. In fact, the radiologists speak not only a national but an international language.

The fluorescence of the platinum cyanide of barium crystals which led to the discovery of x-ray, has played a very important part in their development, and as the reflecting agent in the fluoroscope, has simplified many x-ray procedures. As a means of shortening exposures, reflecting crystals usually in the form of calcium tungstate have been of great benefit in the form of intensifying screens when used in conjunction with plates or films.

I quote from Roentgen's original communication on the advisability of making permanent records of x-ray findings. "Of special interest in many ways is the fact that photographic dry plates show themselves susceptible to x-rays. We are thus in a position to corroborate many phenomena in which mistakes are easy, and I have, whenever possible, controlled each important ocular observation in



fluorescence by means of photography." This advice is as good as when the x-rays were discovered. The plates used in early work were followed by films of cellulose nitrate and following some serious fires in which gas caused some deaths, cellulose acetate films were perfected and today we have a film that may safely be stored in hospitals and offices.

Mentioning only a few of the high spots in radiologic diagnosis, we note the work of Professor Pupin of New York, who in January, 1896, was able to make an x-ray picture of a case of multiple gunshot wounds of the hand. The exposure time was one hour. In the early days as much as four hours was required to make a picture through the thicker parts of the body. Almost from the beginning, improvement was noted in the quality of bone pictures and in a few years very creditable bone pictures were being made. All published reports were, however, a part of surgical systems and appendices to systems of surgery. It was not until 1921 that Baetjer and Waters, radiologists, published the first book in the United States on "Injuries and Diseases of Bones and Joints."

By 1902 urinary diagnosis had taken steps distinctly forward. Caldwell introduced the dilated bag for compression, and Albert Schonberg the tubular cone, both being aids in elimination of secondary radiation. The greatest step in this direction was accomplished by the introduction in 1916 of the Potter-Buckey diaphragm, which today is in general use in taking all the heavy body parts. It is interesting to note that beginning with 1904 the following media were used for pyelography: Emulsion of bismuth, collargol, argyrol, silver oxide and silver iodide. The period 1920-30 was destined to see a momentous advance in the development of urologic roentgenology, which, together with the radiology of the respiratory passages and the biliary apparatus, had entered into what Waters had aptly termed the "injection era" of diagnosis. Skiodan and Uroselectan intravenously gives much information in hydronephrosis, renal tumors, anomalies, calculus and tuberculosis, but has not by any means replaced the standard retrograde pyelography.

In 1902 H. Hulst exhibited the first x-ray of a chest made in the United States without an intensifying screen. From that time on, chest radiography and interpretation improved. It was considerably popularized in 1915 when H. K. Dunham's stereoscopic albums of the chest was placed on the market. The 1920's saw a big impetus to chest radiography, largely because of the great amount of material resulting from the "flu" epidemic of 1918 and 1919 and the return of soldiers gassed in the war. The introduction of iodized oil into the tracheo-bronchial tree did much to place the diagnosis of bronchiectasis on a radiological basis. Much work was also done during this period on the diagnostic segregation of childhood tuberculosis.

In 1908 S. Lang described his technical pro-

cedure for the visualization of the mastoid cells. The decade 1910-1920 recorded an appreciable increase of efforts furthering the roentgenologic study of the skull and accessory sinuses. Many different techniques involving various angles and positions were worked out during this time.

The dental application of the roentgen rays made an early beginning and was confined largely to uneruptions of the second dentition and to malposition with particular reference to impactions of the third molars and apical shadows. The x-ray amplified the birth of the crusade on dead teeth so ably fostered by Dr. Rosenow.

Probably by reason of its comparative ease of access, the esophagus was indicated by the early writers as the first objective in their diagnostic attack on the alimentary canal. For visualization, at first metallic sounds, then rubber tubes filled with shot, spiral wire and the like were introduced into the esophagus even in the face of possible ulcerative lesions. It remained for Williams to suggest mixing bismuth subnitrate with food. Early gastric examinations were made by filling a sausage casing with a mixture of lead and mercury. After the examination was completed, the casing containing the deleterious mixture was withdrawn. About all that was accomplished by this method was to outline the greater curvature. Later this technique was improved by a deglutible gutta-percha bag into which a solution of plumbi acetate was poured. This was aspirated after the examination was completed. From this feeble beginning x-rays have advanced to the number one position in the diagnosis of gastro-intestinal lesions, ulcers, spasms, cancers, diverticuli, polyps, anomalies—all come within the realm of the radiologist.

The year 1910 introduced the era of gallbladder diagnosis in indirect as well as direct methods. The occasional skiagraph of a gallstone stimulated the work in this field and a diagnosis of gallbladder disease was often made on deformity of the duodenal cap. The value of these reports was both damned and praised, and it was not until Grahm Cole, Cophet and Moore in 1924 introduced the method of cholecystography as we know it today, utilizing the function of excretion. In the case of the biliary organs, the radiopaque material is exhibited either perorally or intravenously, sodium tetraiodophenolphthalein being the agent generally used. This dye is excreted in the gallbladder and performs the combined service and disposition of gallstones secondary one of visceral size, contour and position. This test is today regarded as invaluable in the diagnosis of gallbladder conditions.

Roentgenologic interest in the question of female pelvimetry grew steadily during the decade of 1910 and 1920. With special reference to determining the relative relations between the female pelvis and the size and position of the foetus, and we might also add the number of foetuses. It was during this period also that the introduction of radio-opaque substances into the uterus and fallopian tubes was first begun.

Improvement in cardiac diagnosis multiplied during the years from 1920 onward, resulting in exhaustive studies both anatomic and physiologic as well as of morbid conditions among them volumetric measurements of the heart, sizes of the auricles and ventricles, position and condition of the heart and great vessels, and today even the great vessels and chambers of the heart may be safely outlined by the injection of a solution of diodrast.

The important procedure of ventriculography, encephalography and injection of the spinal cord initiated by Dandy has been eagerly followed up in the period from 1920 to the present.

Each year sees new uses for the x-ray in the diagnostic field, with refinements and improvements in the old methods. The marvels introduced by the injection era promise many surprises for the future. Undoubtedly some injection techniques, such as outlining the blood vessels and the reticulo endothelial system, may yet be brought into general use.

#### X-RAY IN WAR

In view of what threatens to be another occasion to make the world safe for democracy and which safety calls for localization of a great many bullets, shell fragments and pieces of splintered bones, it might be well to briefly review the military roentgenology. We are told by Glasser that the Italians were first to apply the rays in war times in 1896. The British used the rays quite extensively in the Boer War, 1899 to 1902. We had very little use for the x-rays in the Spanish War, but beginning with 1914 the medical department of the American army under Maj. William A. Duncan developed a portable x-ray outfit that operated from an electric generator driven by a gasoline engine. There were several of these outfits in this section at the time our army went into Mexico looking for Villa. From this crude beginning more elaborate outfits were designed for the World War No. 1. The greatest use to which these units were put was the localization of foreign bodies. Many ingenious methods were devised. For the most part they were all modifications of triangulation, the more rapid methods making use of the fluoroscope rather than the plate. While but a few of the men trained at Camp Greenleaf ever saw duty at the front, it is said to the credit of the experienced men who did go over and were on duty that very few ex-service men have come to civil hospitals since the war with bullets or shell fragments in any surgically accessible part of the body. Our own experience in bullet localization on a large scale was during the Madero revolution in Mexico. After the battle in Juarez and the fall of the Diaz government, we took a portable Rose coil across the river and made many pictures of wounded men. Our equipment was such, however, that localization by means of triangulation was not attempted. Some of the more important officers were brought to El Paso hospitals, and more accurate work was done on them.

#### X-RAY THERAPY

Advancement of therapy in x-ray to be complete

must also include that of radium, as the two agents are so nearly identical in their action. Irradiation therapy has passed through four distinct phases:

1. The era of enthusiasm—1896 to 1906.
  2. The era of suspicion and distrust—1906 to 1914.
  3. Scientific application of rays—1914 to present time.
  4. The recognition of radiology as a specialty by the American Medical Association; the establishment of a national board of examiners—1933.
- First following its discovery, x-rays were used for treating practically every chronic condition known. The literature was filled with glowing accounts of cures, all unsupported, of course. The theories as to the mode of action were numerous and all were empirical. At the height of this era, in 1906, there were over 3,000 machines in operation in the United States, but with the improvement in mechanical construction and the introduction of the induction coil as a source of energy, more x-rays were produced and serious burns began showing up in large numbers. This led to a marked reaction, and the public and physicians in general turned from x-ray, and it was in disrepute as a therapeutic agent. This era extended to about 1914, when the few scientific physicians such as Pusey, Allen, Pifford, Stellwagon, Pancoast, Pfahler, Williams and others served to keep therapy alive. In 1914, with the development of the Coolidge tube and the further addition of instruments of precision for measurement, the art of therapy was established on a scientific basis, and upon which it still operates, having added many refinements to these basic principles. Early therapeutic x-rays were used only for superficial work. Protective measures were necessarily established to protect the patient, and we are today still using to a certain extent the same protective measure, lead. As the skin absorbed too many of the soft rays, filtration was introduced in this country by Dr. Pfahler, and this lead toward the use of deep x-rays. The first filter was leather. With the increase in the machine voltage, filters have been gradually added to until today aluminum, copper and tin are all in general use. Today relatively large doses of x-ray and radium can be administered to a considerable depth without injury to the skin. All early measurements were made by spark gap, but that, too, has progressed to a fine point, and today the x-ray entering a patient is registered on the instrument panelboard by a system of radio tubes so that the operator knows at all times just what is taking place. All high tension currents have been eliminated, and the present-day equipment is shock proof.

In the treatment of benign tumors and inflammatory conditions, x-ray has many uses. As an agent in the treatment of cancer it stands with its ally, radium, and with surgery as the only two recognized treatments for that dread disease.

If I were to look for a single factor responsible for the phenomenal progress x-ray as a diagnostic



agent has made in the past 43 years, I believe it would be "visualization." The thought is rather well stated in an old Chinese proverb: "One hundred tellings are not as good as one seeing." Omar expressed the same thing for the ancient Persians by saying: "Seeing is believing." And the American phrase is: "I'm from Missouri . . . show me!" Layman and physician alike still continue to prefer the visual conception of their problems.

I always like to think of x-ray therapy as a three-column army. In the center is the physician, the right column is composed of the electrical engineers, and the left column is composed of the physicists. It has been the closely co-ordinated efforts of these three columns that has placed radiology where it stands today.

Roberts-Banner Bldg.

## Pediatric Progress During the Past Twenty-five Years

M. K. WYLDER, M. D.

Albuquerque, N. M.

**T**HE *Journal of Pediatrics* carries an article every month on Pediatric Progress, under the title "Critical Review"; so you can readily see how impossible it is to cover twenty-five years in twenty minutes. Twenty-five years to a geologist or a historian is but a watch in the night—in medical progress at some periods it has been less than that; but since the organization of our society, much has happened and many important advances have been made.

In 1914, there was not one man in all the territory covered by this society who limited himself entirely to pediatrics. Now according to the last directory there are twenty-three who either limit or pay especial attention to this line of work.

The American Pediatric Society has only been in existence for half a century. The membership is largely composed of teachers and is limited to invitation. The American Academy of Pediatrics hopes to enlist all the reputable men who do pediatrics; their membership is limited to those who have passed and been certified by the American Board of Pediatrics. These organizations have contributed largely to the aggregate of pediatric knowledge; they have stimulated research and have cooperated effectively in the elevation of standards and of practice. They have encouraged the organization of many agencies dedicated to the betterment of child welfare.

The beneficial and humanitarian influence of these organizations, together with that of our own society, may be seen as we review some of the progress of the past twenty-five years. The function of all medical organizations is to stimulate study and elevate standards to the end that disease may be prevented and suffering relieved.

It is interesting to reflect on how the solution of one problem leads to another. For instance, the old text books had much to say about tetanus in the newborn. Dr. Mendelson tells me that in the hospital in Bangkok, Siam when he was there they averaged about one case of tetanus a day in babies who had been delivered by some old native woman and brought to the hospital to die. It has been almost forty years since I received a diploma stating

that I was a Doctor of Medicine, and I have yet to see my first case of tetanus in the newborn. With hospitalization tetanus and what was formerly spoken of as child-bed fever are now practically unknown; but with the grouping of babies together, we see many cases of impetigo and hear frequently of nursery epidemics, some of which have been very serious. These epidemics have occurred in some of our largest and best hospitals. The nursery problem is one which has not yet been solved, and which must be solved. I heard Dr. Abt make the statement that it had taken fifty years to educate the public to hospital obstetrics, but that if this question was not soon solved it would be back to the homes in no time.

In the year 1909, the Society for the Study and Prevention of Infant Mortality was organized. They estimated that at that time there were over 300,000 deaths per year in an infant population of 1,500,000. There were more infant deaths from diarrheal diseases during July, August and September than occurred from all causes in the other nine months. We have seen that high curve flattened out and now the peak of infant deaths comes in the winter months from respiratory infections.

A study was made near Albuquerque in the Atrisco area. Atrisco is a small community about two miles wide and three miles long, with the Rio Grande river on one side and a high bluff on the other. In 1936 there were eighteen deaths in this district from bacillary dysentery. During the winter of 1936 and '37 they built sanitary privies for every home in this district and the public health nurse went from home to home and explained the importance of using the privies and the necessity of keeping the seat covered and the door closed. The following year there was only one death from dysentery in the district, and that child had had a positive dysentery the year before and had carried the infection over until the next season. With that alibi they had a clear slate, and so discovered what we have always known—that unhygienic and unsanitary conditions permit dysentery to flourish.

The anxiety of the mother to make her children keep ahead of the standard height and weight charts has caused many children to be over-fed and this stuffing process has brought us another prob-

lem. How often do we hear the mother say, "Doctor, my child won't eat". The wide dissemination of these height and weight tables has caused much maternal and paternal unhappiness. It is hard to make parents realize that these tables are only an average, and that a child may be perfectly healthy and still be considerably under or above the figure on the chart.

Kidney conditions have not been satisfactorily classified. However, Aldrich, Bilderback and many others have helped some by separating the nephroses or degenerative processes from the nephrites or inflammatory processes. Yet there are those who contend that the degenerations are the result of inflammation.

Another problem that is being passed on to us by the obstetrician requires considerable thought. The obstetrician desires to make childbirth painless by the use of sleep-producing drugs, and to shorten labor by the use of pituitary extracts of one kind or another. But in Bundeson's report of autopsies on a large group of babies who died in the neonatal period, he states that a large percentage of them showed intracranial hemorrhages, and a high percentage of the mothers had had pituitrin.

Dr. M. Edward Davis from the Chicago Lying-in Hospital told us that they believed that it would have been better had pituitrin never been discovered. Dr. Fred Schreiber of Detroit made a study of 500 children with degenerative brain conditions; 72% of these children had not breathed at birth or had had difficulty in breathing during the first few days. One of the effects of the pain relieving drugs given at childbirth is to depress respiration in the mother; this he believes affects the fetus who depends on the mother for oxygen and nourishment. In a group of 100 babies, the mothers of which had been given pain relieving drugs or anesthetic, or both during labor, showed that 77 per cent had difficulty in breathing. The baby that is born in the home before the doctor gets there with his nembutol, seconal, morphine, ether and pituitrin, cries lustily at birth. Let us remember what I once heard Dr. DeLee say, "Don't do any harm."

The Endocrine treatments have come to the fore. Some have risen and fallen, but many of them are here to stay. George Vincent said, "We teach more about the endocrines than we know". Thyroid of course was used before our time, but insulin is perhaps the most important, and its benefits are great. Thousands of children are living today that would not be without insulin. Before insulin, diabetic mortality in children was about 100 per cent. The ones who did not die, did not have true diabetes.

Many conditions that were not understood, we now know to be of allergic origin. Almost fifty years ago Sir William Osler said there was a relationship between eczema, asthma, urticaria and angioneurotic edema, but he was fifty years ahead of his time, and we now know the truth of what he said then. We have seen the deficiency diseases

conquered with a better understanding of the vitamins—pellagra, scurvy, rickets, beri-beri, and if you are sufficiently credulous the detail men will convince you that what Ponce De Leon sought in vain we now have in vitamins. The two new Vitamins add much to the health and happiness of the race. Vitamin J—the Joy Vitamin found in alcoholic beverages, and Vitamin K which stimulates blood coagulation. As we laugh at some of the medical theories of the past, I wonder if future generations will not laugh at us for our child-like faith in the Vitamin.

Since the perfection of the Rammstedt-Fredet operation for pyloric stenosis, most of these cases are saved. Coeliac disease is now in the curable class since the work of John Howland, together with the discovery of Haas that these children could assimilate enough bananas to keep up their carbohydrates.

This period has seen the complete working out of diphtheria. With the new method we can get our culture growth in a few hours. We can now tell if a child is immune, or if the child has been exposed and is susceptible we can give a small dose of the antitoxin and prevent infection. If the child already has diphtheria, we can neutralize the toxins with antitoxin and the child will get well. With toxin-antitoxin or toxoid we can confer an immunity.

We have seen the cause of scarlet fever discovered and the Dick test perfected. The convalescent serums have been perfected and their worth proved. I have used it in several severe cases—and I mean the ones with a temperature of 105 when you first see them—and saved every one of them. If you can get your convalescent serum in time, I believe you can save every case of scarlet fever.

With the discovery of sulfanilamide, prontosil, neoprontosil, prontylin, and sulfapyridine, we have an entirely new armamentarium; as these fit into almost all types of practice. We will hear much more about them from other angles, so I will pass them hurriedly and not give the time to which they are entitled. I heard John Toomey of Cleveland, who is a "doubting Thomas", say that sulfanilamide was the only remedy that had ever been offered for erysipelas that would shorten the course of the disease. At the A. M. A. in 1937 I was sitting beside an Irish friend and after we had heard about five papers on sulfanilamide giving a list of all the diseases they had cured, including almost everything but warts and ingrown toenails, he whispered to me and said, "My God, Wylder, that stuff's as good as mercurochrome used to be!"

With sulfapyridine we have a weapon against pneumonia the like of which we never even dreamed. Charles Hendee Smith of New York, who led a panel discussion at the St. Louis session of the A. M. A. last spring, said that some of the houses were going to discontinue the serum because the call would almost disappear, since you could cure



a case with sulfapyridine for a small fraction of the cost of serum.

Johns Hopkins reports 72 consecutive cases and no deaths. St. Louis Childrens reports 77 cases with one death, and the alibi that the one who died was an advanced case when brought to the hospital, and there are many such reports. I have had 7 cases and saved them all—so we feel like that old philosopher who cried, "Eureka, I have found it".

As we look back on the first meeting of this organization that was held in Albuquerque—Warner

Watkins was there from Phoenix; Butler was there from Tucson; Drs. Rawlings and Vance, I believe, were there from El Paso, and that was about all except our home boys, and most of them stayed in their offices; we have seen many valuable aids to medical science develop, and I feel that this society has been a great stimulus in this development, and I am proud to have been associated with such a fine bunch of fellows.

221 W. Central Ave.

## Growing Interest in Heart Disease in the Southwest (Since 1915)

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WHAT happened in the last twenty-five years, sprang from medical events of an earlier date. Cardiac pathology was largely an unexplored field up to the time of Heberden, Hunter, Parry, and Jenner. True, William Harvey, in 1647 had made the earliest observation on cardiac rupture. "His patient, a nobleman, had often suffered with paroxysms of oppressive pain in the chest". He died in one of these paroxysms. The left ventricle was ruptured with an opening sufficient to admit a man's finger. Harvey made no attempt to explain why.<sup>1</sup>

Jenner was the first to ascribe angina pectoris to calcification of the coronary arteries. He predicted that this was the cause of John Hunter's angina. Autopsy proved this to be correct. But coronary thrombosis and cardiac infarct were overlooked for another century, attention of pathologists having gone astray on the theory that cardiac rupture, fibrosis, and aneurysm were due to rheumatic inflammatory changes, endocarditis, pericarditis, and myocarditis.

Finally Prof. Carl Weigert, in 1880, and Dr. Karl Huber, 1882, described many cases of cardiac rupture and aneurysm, and were the first to clearly and accurately set forth the gross and microscopic findings in these cases and to offer a tenable explanation between these lesions and obstruction of the coronary arteries (Virchow's Archives). In 1887 John Lindsay Stevens, in a series of lectures reported in the London Lancet described 16 cases of infarction, aneurysm, and fibrosis of the ventricle and rupture, showing the relation of these lesions to coronary sclerosis, with detailed histological studies. But no attention was paid to antemortem symptoms preceding death and no connection had ever been guessed. Finally Osler in his Lumleian lectures in 1910 described many cases of angina pectoris, and in one case remarked that "on account of the severity of the attack, its long duration, the presence of a friction rub, and muffled sounds at

the apex," he felt sure that there must have been coronary thrombosis. But it finally remained for Jas. B. Herrick, Professor of Medicine at Rush Medical College, to make careful antemortem studies in three cases and to give the diagnostic clinical symptoms in the main, as we know them today. In one case there was a postmortem, proving the correctness of his opinion. He published his findings in the A. M. A. in 1912. To his great disappointment, his work attracted very little attention, until about 1920, when others began to make the diagnosis, using Herrick's data.

Sir James Mackenzie revolutionized our ideas about heart and pulse irregularities. He also made extensive studies on angina pectoris. His book on Heart Disease appeared in 1912. Maude Abbott's classic work on congenital heart disease appeared in Osler's System of Medicine a few years later. Her writings still remain as the outstanding guide to diagnosis in this field.

The work of Louis Gross on The Blood Supply to the Heart<sup>2</sup>, and papers by Jos. T. Wearn, on The Role of the Thebesian Vessels in the Circulation of the Heart and on the Extent of the Capillary Bed of the Heart<sup>3</sup>, became landmarks in cardiology, furnishing data for a broad understanding of the mechanism of the coronary circulation and enabling us to conceive how the heart keeps going after occlusion, of one or even both coronary arteries.

The electrocardiograph began to be used in some of the large hospitals in Europe about 1910, but in 1915, there were probably not even a dozen machines in this country. While Mackenzie had taught us how to recognize most cardiac irregularities by physical examination alone, still the electrocardiograph is almost indispensable in auricular flutter, bundle branch block, some cases of acute coronary obstruction, and auricular fibrillation. Strange to say, the rank and file of the profession have more trouble in recognizing the six common irregularities than in being sure about coronary obstruction. The mere possession of an electrocardiograph does not solve all the problems

<sup>1</sup>Read before Southwestern Medical Association, El Paso; November 9-11, 1939.

of cardiac diagnosis any more than a blood pressure apparatus can tell us all about essential hypertension. The electrocardiograph is of relatively little use in clearing up the diagnosis of coronary sclerosis or simple angina pectoris.

From 1917 to 1923 the number of cases that were reported as coronary obstruction slowly increased, and the value of the electrocardiograph in diagnosis became more and more apparent. Still the vast majority of doctors had taken very little interest in the subject. This is indicated by the fact that when Dr. W. W. Waite and I presented the paper on Cardiac Infarct and Coronary Sclerosis at the meeting of the Texas Medical Society in 1925, in which 8 cases were reported and postmortem specimens presented, there was but one man in the audience ready to discuss the subject. This paper was considered of enough importance at the time to be referred to, in the *Boston Medical and Surgical Journal*, in a review of the progress of cardiology for that year.

#### WORK IN EL PASO AND PHOENIX

In 1924 Dr. Hugh Crouse installed the first electrocardiograph in El Paso, and probably the first in our territory. Mr. Joe Wallack, who had been thoroughly trained in the army for three years, was put in charge of Electrocardiography and basal metabolism. The writer bought his own first electrocardiograph in 1927. Eleven years ago Dr. Paul Holbrook installed the first electrocardiograph in Tucson. At the present time there are seven electrocardiographs in that city. There are only two doctors who give a large part of their time to cardiology. There are five electrocardiographs, in Phoenix. The first one was installed by Drs. Fred Holmer and Victor Randolph in 1928. There were a considerable number of doctors in that vicinity having trouble in diagnosing cardiac irregularities, but most of them have little trouble in diagnosing acute coronary obstruction. However, many are still too lax in enforcing complete rest. There is a growing interest in circulatory diseases in Phoenix. In Albuquerque there are four electrocardiographs, three of them in hospitals, and one private. There is growing interest in the subject. Dr. Robert Brown of Santa Fe installed an electrocardiograph on one of the hospitals at Santa Fe which is at the disposal of any doctor wishing to use it. There is an increasing interest in cardiology and pathology in that city. Dr. F. H. Crail of Las Vegas had the first electrocardiograph in New Mexico. There has not been much interest in cardiology among the older doctors there, but the recent graduates recognize cardiac pathology much better.

A cardiac clinic has been operating in El Paso since 1920. For the first nine years, the writer was in charge, and Drs. Duncan and Rheinheimer did excellent work. Since then, the clinic has been operated under Dr. John Morrison, at the County Hospital, with a large attendance.

In 1923 Dr. Waite organized the El Paso Pathological and Post Mortem Club, which was a great

success. Two hundred postmortems were done the first year, and something like two thousand five hundred in all. It was a great opportunity for those interested to get first hand information.

#### AUTHOR'S EXPERIENCES

In my own practice I've had four cases of ruptured heart, three of them doctors. The first doctor thought he had gallstones, and said he had had many attacks before, just like this. He dragged around for six weeks before coming to El Paso, and died the next day. Postmortem showed a very large heart with a clot passing through the ventricular septum, from the left to the right ventricle, and a large infarct about the left apex. There were no gallstones. Evidently he had angina pectoris all the time.

Another doctor, age 79 years, died from a small rupture due to recent infarct, at the extreme left apex. Evidently he had been going about unconscious of what was the matter. The recent clot was super-imposed upon an old scar. The third doctor had been treated some six weeks before for angina pectoris, and never been confined to bed. On going up stairs to his office, he had a violent pain, and went into collapse, and died a few moments later. Post mortem showed a rupture of a large scar in the upper posterior left ventricle.

The other case was a soldier, 59 years, who had suffered several days with pain in the chest, but had continued to work digging in the yard. He was sent to Beaumont Hospital where he died a few days later. There was a rupture of the left ventricle at the apex.

In the early numbers of the *American Journal of Medical Sciences* there are many reports of patients dying suddenly of angina pectoris, and in a large per cent there was rupture of the heart. The same is true of the cases of Weigert, Huber, and Stevens, previously discussed, of course no antemortem diagnosis had even been made up to 1912. I think all this evidence points very clearly to the necessity for immediate, absolute and prolonged rest in the management of acute coronary obstruction.

I have had about eighteen cases of acute coronary obstruction under observation, from the time of recovery up to the time of death. A man 49 years old, manager of a large insurance agency, was seen on January 23, 1924. His attack was very severe, vomited a large amount of blood and had to have large doses of morphine and finally chloroform to relieve the pain. There was a friction rub over the heart. It was five months before he was able to go to California to rest, and finally resumed his work. About three years after recovery, he and his wife made an auto trip in a Model T, camping every night. The trip included the Grand Canyon, crossing at Lee's Ferry, then to Zion Canyon, Southern Utah, Yellowstone Park, Western Canada, East to Quebec, and finally down to Florida and back to El Paso. He stood the trip well, taking good care of his diet. He did all the driving. Later he made



a similar trip and when he came back, he had gained 20 lbs., and seemed in perfect health. He said in a boasting way that he had done what he pleased on this trip, ate anything he liked and as much as he wanted. Two days later he came to see me in great pain, so much so, that it took at least three hours to get him at all comfortable. The electrocardiogram showed T inverted in leads 2 and 3. He recovered in about a month, and two weeks later he went back to work. In November, 1938, he planned a trip to Gallup, N. M. He finally arrived, after a good deal of dyspnea on the road, and died the same night, after a heavy supper.

Certainly in this case, altitude was not so dangerous as we are led to believe in these days, when anoxemia and coronary flow are discussed so much. The question of altitude is an individual matter, and can only be decided by careful trial.

A second case of great interest was that of a railroad passenger conductor. The attack, June, 1924. Absolute rest for one month, rest at moderate activity for another month, returned to his old job. His weight was reduced from 240 to 190 lbs., and he felt better than before his attack. He died in 1932, age 70 years. Postmortem showed a scar of good thickness in the upper posterior left ventricle about an inch in diameter, and with the heart muscle in very good condition. There were abscesses in the left kidney, gallstones, and a very large stomach ulcer about an inch and one-half in diameter. He had an uncontrollable hemorrhage from the stomach, and this was undoubtedly the cause of death.

I think this case teaches that after infarction, the heart is not necessarily hopelessly damaged. Some 60 or 70 per cent are able to return to their work, the only caution is discretion in eating and exercise. The diet should be low in fats, and the overweights should reduce. Sensible exercise will improve the heart muscle. Exercise is the one sure way to increase the coronary flow, just as we increase the blood flow in the skeletal muscles and build them up. But care should be taken not to overdo and begin gradually. Exercise is not often the precipitating cause of acute coronary obstruction. In 890 cases studied by Master and his associates it was found as a cause in only 2.2 per cent.

My impression is that prognosis after acute coronary occlusion is not so bad in the aged as one might think. Mrs. G., age 85 years, overweight and eating too much, quite active, mentally alert, was seen November 9, 1935. Three days before she had a violent pain in the epigastric area. It went no higher. Pain stopped and returned next day, going above the heart in the midline; temperature 100 degrees; B. P. 108/70; pulse regular 70. Heart sounds almost inaudible. No pain. Cheyne Stokes respiration. Put in bed four weeks. Good recovery. She is living and fairly at 90. She made trips to Houston and is now in Los Angeles. She has felt about as well in El Paso as at a lower altitude.

So far I have discussed chiefly angina pectoris and cardiac infarction, because I have seen considerably more of these ailments. In this part of the Southwest we have seen all kinds of heart disease. In our clinic we saw a good number of children with rheumatic heart lesions. Syphilitic aortitis is often seen. Formerly we saw an excessive number of children with hereditary syphilis but it is much less common now. The hereditary type rarely causes aneurysm or heart disease. Congenital heart defects are quite frequent. We have seen two children with congenital heart block.

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## ALCOHOL AS A BEVERAGE

Long overdue is an impartial, objective, hard-headed study of the real effect of alcohol on the various tissues of the human body at rest, at work, at play. For some reason this question has always been clouded by the hate type of statements, on the one hand by the so-called moral interests, and on the other by the vested interests with a monetary stake in the answers.

It is well known that small amounts of alcohol may be relaxing, comforting, and in a sense, nutritious. It is likewise well known that few persons stop to think, when taking the evening cocktail, that "just one more" may exceed the pleasant, probably harmless level of alcohol in the blood stream.

How much alcohol can a given individual take and still show adequate motor response to various stimuli? The answer to this is important—in these days of high-speed conveyances. Is a glass of wine with a heavy dinner actually helpful to the digestion from a physiological point of view? Or does the feeling of well-being it brings about constitute the real help to digestion? Does a glass of beer slow the driver's mental activities to a point of potential danger? Do 2 or 3 glasses?

Everyone in the wide world has ready answers to the questions above—just as folks once did to the question of how many angels could dance on a pin-point. But, truthfully, aren't these ready answers based on hearsay, on prejudice, on experiences with individual cases, on wishful thinking?

The process of fermentation is as old as life itself. The production of fermented beverages is known to the most primitive of peoples. The art is not likely to be lost to men. Why then, should not man shunt the taboos to the ash heap, and set his brains to the establishment of scientific answers to all the thousand and one questions conjured by the word "alcohol"? Shall his soul be sold to the brewing interests and he thereby be consigned to hell because in his infinite, laudable curiosity he seeks true answers? Shall the town drunkard (horrible example) forever be the standard reply to "what effect does alcohol have on the human body"? Shall laboratory rats forever be the criteria of those who say alcohol is not injurious?

Drinking peoples have contributed most to the civilization of this world—in art, in science, in gentle living. Total abstainers, such as the Mohammedans, have given the world very little from a cultural standpoint. But are these real answers? Are not many other modifying factors to be weighed here?

The confirmed drunkard is a disgusting sight to everyone. But likewise isn't any man who has no self-control because of other reasons? By the same token, the sour-puss, blue-nose can also be rather disgusting to many people. Now isn't there a basis of compromise between these extremes of behavior? That meeting ground will be difficult to establish, admittedly. Let the question be examined with open minds, free from propaganda's taint. Then let the information and conclusions be given wholly and truthfully, as is done in any other scientific investigation.

The American Association for the Advancement of Science is currently supporting an investigative project calculated to furnish just such objective answers as the world needs. The final report should be highly significant.

## GERMANY'S PLIGHT

Discounting heavily as one must information of conditions abroad, there still remain impressive indications that the health of the German people is in a sorry plight. Beginning several years ago with the rigid regimentation of German physicians, the gamut of tragedy now approaches the critical phase. Following regimentation in the service of the State there came expulsion for many of the most brilliant scientific minds. Then war. The demands of the armed services have removed so many German physicians from civilian practice that it is said that there remain about 8,000 to care for 9,000,000 civilians—29,000 physicians having been inducted into military service.

Various reports, many published in German journals, add to the dreadful picture. Suicide rate of the United States is 1.4 per 10,000—in Germany it is 4.1. The incidence of sickness rose 20.3% in 3 years. Heart disease in children has increased alarmingly; the death rate for infectious diseases is one of the highest in the world. Diphtheria mor-



tality is now 4 times that of the United States. A recent survey in Munich showed 96.5% of the school children had rickets. In Hamburg, Leipsig and Munich only expectant mothers and cases of contagious disease are admitted to hospitals.

Medical service in Germany is steadily deteriorating in another manner. The once rigid laws controlling education have been modified to reduce the training period by 2 years and to legalize, without any form of examination, the activities of assorted quacks, faith healers, nature cultists, and the like.

So passes a once healthy, vigorous people into the realm of sickness, physical and mental. Generations to come must surely be marked with the folly of today. The lesson is obvious—regimentation, internecine strife, expulsion, war—and the people pay dearly for a gaudy bill of goods when the tinsel begins to tarnish.

Does America want any part of this tragic sequence? It isn't just coincidence that a free, untrammelled American system of medicine has, during the short life of this Republic, increased the life expectancy of its citizens from 35 years to 62 years!

### NORMAL BLOOD PRESSURE

What constitutes normal blood pressure? This, of course, must vary with individuals, with environment, with many other factors. But it is true that a great deal of confusion and uncertainty obscures the possible truth. So many writers have included all extremes of blood pressures in statistical sampling that the higher brackets must increase the general averages.

Robinson<sup>1</sup> has studied the records of 7,478 males and 3,405 females appearing for periodic health examinations in the Chicago area during 1933-34. He found that the males had an average blood pressure of 121 mm, the females showed an average of 117 mm. The average diastolic pressure was 74 mm for the males, 71 mm for the females. But the modal pressure of the group showed the males more frequently had a pressure of 116 mm systolic and 71 mm diastolic, while the females showed 113 mm systolic and 70 mm diastolic. 70% of males and 75% of females had a blood pressure of under 125/80 mm.

Now, eliminating serially various levels of blood pressure over 140/90 mm (arbitrarily set), showed the mean figure for the delimited male group to be 116 mm, in contrast to the mean for the total male group of 121 mm. Similar figures in the female group were 112 mm in the delimited segment as compared to 117 mm in the total female number.

It is concluded that 125/80 mm should be considered the upper limit of normal rather than 140/90 mm. It is stated that blood pressures steadily above 140/90 mm are incompatible with normal life span. Ages of the entire group studied varied from 18 to 80 years.

<sup>1</sup> I. Robinson, S. C., The Range of Normal Blood Pressure; Proc. L. E. Ex. 1:104 (Sept.-Oct., 1939).

### BULLS—LIONS—DUES!

A lion had been watching three bulls feeding in an open field. He had tried to attack them several times, but they had kept together and helped one another to drive him off. The lion had little hope of eating them, for he was no match for three strong bulls with their sharp horns and hoofs.

Then one day the bulls had a quarrel, and, when the hungry lion came to look at them and lick his chops as he was accustomed to do, he found them in separate corners of the field, as far away from one another as they could get.

It was now an easy matter for the lion to attack them one at a time, and this he proceeded to do with the greatest satisfaction and relish.

*Moral: In unity is strength.*

Let the moral above be recalled again to American physicians. The time is once more at hand when annual dues to one's county, state and national societies are to be paid. These societies are magnificent evidence of the unity of purpose of American medicine. And unity in the face of the past two years' attempts to wreck America's system of medicine has spelled the doom of the Crackpots and the Heaven-help-us gang. So pay your dues!

### INTRANASAL MEDICATION

Increasing knowledge of the physiology of the respiratory tract seems to support the conclusion that, especially in infants and small children, it is actually dangerous to use nose drops having a base of unsaponifiable oils. In support of this statement it should be pointed out that (1) such oils are not miscible with the nasal secretions, (2) ciliary action of the respiratory tract is markedly impaired by the oil and by most of the commonly used medicaments dissolved therein, (3) records now exist of many autopsied cases of a peculiar type of pneumonia, traceable to the deposition of oils in the smaller air passages of the lungs.

From every standpoint, it seems scientifically sound to discontinue in most cases the use of unsaponifiable oils in the nose, and substitute therefor a physiological solution of ephedrin or one of the newer ephedrin-like synthetic preparations, in a buffered aqueous solvent.

The danger of lipoid pneumonia in infants is a real one. Too many mothers yet purchase from the drug store a bottle of the much advertised junk ballyhooed so widely and fill baby's nose at the first sign of sniffles. It is the duty of the family physician to warn his patients of the potential dangers of such a practice.

### CORRECTION

Due to the frailties of mice, men, proofreaders and editors, two face-pinking mistakes were blazoned in the cold type of the January issue. They were:

(Continued on page 71)

*Special Section*

## Arizona State Medical Association

PRESTON T. BROWN, M.D., *Associate Editor*  
403 Professional Bldg., Phoenix, Arizona

## NECROLOGY

KIMBALL BANNISTER, M.D.

A tragic automobile accident on the early morning of January 29 claimed the life of Dr. Kimball Bannister of Phoenix and that of Mrs. Bannister as well. Dr. and Mrs. Bannister, together with two guests, one of whom was also killed, were returning from the Annual Charity Ball, a benefit for St. Luke's Home, when their car was crashed into at an intersection by a speeding automobile not having the right-of-way. The tragedy threw a pall over the community which knew Dr. and Mrs. Bannister so well for their civic and professional activities.

Dr. Kimball Bannister was born at Princeton, Illinois, received his A B Degree from the University of Illinois, and his degree in Medicine from Northwestern University College of Medicine in 1914. His internship was at Cook County Hospital, Chicago, for a year and a half.

Dr. Bannister had been in practice in Phoenix since 1916 and was a member of the County, State, and National Medical organizations, as well as the Southwestern Medical Association, and the American College of Surgeons. In College his fraternities were Delta Upsilon and Nu Sigma Nu.

Civic affairs also claimed the attention and interest of Dr. Bannister. He was a Director of the Phoenix Country Club, the Arizona Club, was a Mason, Shriner and a Jester. Golf was his hobby and in this sport he excelled, having held the amateur championship for Arizona and for the Southwest on different occasions.

He married Elizabeth Davis, also a graduate of Northwestern University, in 1916. Three sons and one daughter survive their parents—Kimball, Jr., John, Mary Elizabeth, and Bryant. The loss to this family of young people is a tragic one, indeed.

The passing of Dr. and Mrs. Bannister is sincerely mourned by their host of friends and civic and professional associates.

## CASE REPORT

## SCLEROSIS TUBERCULOSIS OF THE THYROID GLAND

H. A. BARNES, M.D.

C. W. SECHRIST, M.D.

M. G. FRONSKE, M.D.

*Flagstaff Hospital, Flagstaff, Arizona*

Tuberculosis of the thyroid gland is usually incidental to tuberculosis in other parts of the body; it is found more often at autopsy than at operation, but is found sometimes when not suspected in

adenomatous goiters and in hyperplastic goiters.

We have but one case to report, and because of our suspicion of malignancy, our attention has been called to the sclerosing type of tuberculosis, and because no other signs of tuberculosis existed elsewhere after thorough clinical study.

Doctors Collier and Huggins<sup>1</sup> in a review of the literature, point to the relative rarity of tuberculous infections of endocrine glands. The prevailing thoughts of middle nineteenth century pathologists—namely, Virchow and Rokitansky—were that there existed some mutual antagonism between tuberculosis and goiter and that the presence of goiter excluded the possibility of tuberculosis. That the number of recorded cases has increased in the last 30 years has been attested to by the fact that routine pathological studies are done on all thyroidectomized patients. The total number at present is not large.

As early as 1917, Mosiman<sup>2</sup> reported nine cases of tuberculosis of the thyroid from Crile's clinic. In 1921 Ruggins<sup>3</sup> called attention to the co-existence of goiter, hyperplasia in ten of the fourteen cases he reported which brought up the question, "Does the thyroid undergo hyperplasia because of the tuberculosis process, or does an already pre-existent moderate hyperplasia lend itself readily to tuberculosis infection"? This is still a moot question, but careful observers lean to the latter thought. Tuberculosis of the thyroid gland can exist without any demonstrable evidence of tuberculosis elsewhere in the body.

The microscopic picture of tuberculosis of the thyroid is typical of that found in other organs of the body. The tuberculous process, however, can be associated with various physiological and pathological changes in the thyroid gland, as hyperplasia, pure colloid goiter, adenomatous goiter, sarcomatous degeneration, or any combination of the aforementioned conditions<sup>3</sup>.

There is still a disproportion today between the actual number of times the thyroid gland is involved in a tuberculous process and the number of times that thyroidectomy is done, to warrant calling the condition a clinical rarity. An incidence of 0.1 per cent is reported at the Mayo Clinic over a period of eleven years, in which 20,758 thyroid glands were removed surgically, and tuberculosis diagnosed 21 times<sup>4</sup>.

Attempts to formulate a syndrome by which the disease can be recognized clinically have been rather fruitless, and as such the diagnosis is still a microscopic one.

(Continued on page 69)



## *The President's Page*

THE Platform of the American Medical Association relative to a health program of National scope merits the support of each and every physician. It is printed in blackface in the editorial column of the Journal of the American Medical Association each week. Let us blackface the principles laid down in this platform by familiarizing ourselves fully with its precepts and calling them to the attention of our patients and friends in order that they may know just what organized medicine supports in the way of an expanded program of health.


### THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

Let us pull together as we never have before—for in union there is strength—and work diligently for the best interests of the public we serve through the principles as outlined in this platform by our parent body, The American Medical Association.

In all sincerity,

A handwritten signature in dark ink, reading "Chas. S. Smith M.D.", written in a cursive style.

CHAS. S. SMITH, M. D., President.

*Annual Meeting*  
OF  
**The Arizona State Medical  
Association**

at TUCSON, ARIZONA

on APRIL 18, 19, 20, 1940  
PIMA COUNTY MEDICAL SOCIETY—HOST



HEADQUARTERS—SANTA RITA HOTEL



*Scientific Program*

**GUEST SPEAKERS:**

1. EDWARD LEE DORSETT, M.D., Assistant Professor of Obstetrics and Gynecology, St. Louis University School of Medicine, St. Louis, Mo.
2. THOMAS J. HARRIS, M. D., American Board of Otolaryngology, New York City, New York.
3. JOHN SHELTON HORSLEY, M. D., Surgery, Richmond, Virginia.
4. S. D. INGHAM, M. D., Neurology and Psychiatry, Los Angeles, Calif.
5. HANS LISSER, M. D., Clinical Professor of Medicine, University of California, San Francisco, Calif.
6. CHAS. F. MCKHANN, M. D., Assistant Professor of Pediatrics and Communicable Diseases Harvard Medical School, Boston, Mass.
7. WM. S. MIDDLETON, M. D., Dean and Professor of Medicine, University of Wisconsin Medical School, Madison, Wis.
8. Others to be announced later.

**LOCAL SPEAKERS:**

1. JOHN E. BACON, M. D., Miami, Arizona.
2. THOMAS H. BATE, M. D., Phoenix, Arizona.
3. E. PAYNE PALMER, M. D., Phoenix, Arizona.
4. H. G. WILLIAMS, M. D., Phoenix, Arizona.
5. To be announced later.



ROUND TABLE LUNCHEONS, BANQUET, PUBLIC MEETING, SECTIONS. AUXILIARY PROGRAM AND ENTERTAINMENT. SEE MARCH ISSUE OF SOUTHWESTERN MEDICINE FOR PROGRAM IN FULL

*Remember --- April 18-19-20 at Tucson*

YOU ARE CORDIALLY INVITED TO ATTEND.



## CASE REPORT

Present case of 44-year-old female (housewife) with chief complaints of (1) pain in the left ear, (2) noticeable enlargement of the neck, and (3) nervousness. Patient dates onset of present complaint to 2 months ago with noticeable neuralgic pain in the left lower cervical region. At that time she consulted her physician, who upon careful questioning was able to elicit complaints of recent weight loss of 7 lbs., nervousness, and loss of patience with her children, dyspnea, hot sensations and the requirement of a good deal of will power to perform the ordinary daily household tasks. In addition there was observed marked weakness in the knees, and intolerance to heat with a pronounced heart consciousness worse at night when lying on the left side. Appetite has remained good and not unduly ravenous. There has been no diarrhea or g. i. upset. Has observed scanty and irregular menses the past 4 months, which the patient thought was due to oncoming menarche.

Patient named had 2 children, both normal births. There was nothing noted in her past medical history other than occasional attacks of neuritis which have been relieved since tonsillectomy. There was a definite carcinoma history from the paternal side, but no history of goiter, nervous indigestion or famileal heredo-degenerative disease in the family.

Pertinent objective findings revealed a small, hyperkinetic female, about 40 years of age, very excitable with mildly protruding eyeballs with a moist skin, easily disturbed psyche and a diffusely moderately symmetrically enlarged thyroid gland that was definitely board-like and ligneous to the palpating hand. There was one small hard nodule the size of a hickory nut in the inferior portion of the left lobe. There were no enlarged lymph glands. The area of skin overlying the superficial left cervical plexus was definitely hyperesthetic. The chest presented no abnormalities. The cardiac impulse was diffuse, snappy, and very noticeable, the cardiac rate 110 rhythmic. There were no murmurs suggestive of relative insufficiency at any of the valves. The tendon reflexes were all hyperactive. Diagnosis of carcinoma of the thyroid was made with profound thyrotoxicosis.

Prior to hospitalization, patient had 3 weeks of bed rest, Lugol's solution, and mild sedation with very little improvement in her clinical condition. The laboratory work revealed a negative urine and Kline tests. Blood serology was negative, r.b.c. 5,300,000, Hb. 16.3 gm., W.B.C. 8,050, neutrophils 70%, small lymphocytes 30%. The sedimentation rate was 20 mm. in one hour, blood sugar 95.2 mg. per cent, blood cholesterol 220 mg. per cent, and the B.M.R. was 30%. The tuberculin test and x-ray of chest was negative for tuberculosis. After two days of preparation in the hospital with hypertonic glucose, mild sedation, and Lugol's solution, a total thyroidectomy was done, under  $\frac{1}{2}$  of 1% novocaine anesthesia. At the time of opera-

tion a very hard diffuse, slightly enlarged atrophic gland was found which on section cut with the typical cartilaginous grating sound of malignancy. There was no evidence of extra capsular extension of the pathology.

The immediate and subsequent post operative course of the patient was uneventful, presented no cardio-toxic, nervous or genito-intestinal upsets. The removed at operation presented a problem of differential diagnosis considering (1) malignancy (2) ligneous thyroiditis and (3) tuberculosis. Microscopic sections showed extensive chronic inflammatory changes. The glandular structure was atrophied, and in some areas completely obliterated due to marked inflammatory fibroplasia. There were granulomatous lesions, many of which with giant cells forming typical tubercles. A microscopic diagnosis of tuberculosis of thyroid was made.

Our follow-up records reveal that the patient has been well on one grain of thyroid extract daily which was administered to control the change in her metabolism to a myxedematous state. Basal metabolism rate was -28.

This case is reported because of its clinical rarity. While the literature is as yet not too voluminous on the subject, we must be constantly on the lookout for the more rare conditions of the thyroid gland.

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## CASE REPORT

## RETROGRADE INTUSSUSCEPTION OF JEJUNUM FOLLOWING GASTRO-ENTEROSTOMY

H. A. BARNES, M. D.

C. W. SECHRIST, M. D.

*Flagstaff Hospital, Flagstaff, Arizona*

This case illustrates how extraneous events can alter the course of a surgical convalescence. The patient had a no loop retro-colic posterior gastro-enterostomy performed. During the tenth week of his convalescence, and while on a diet quite satisfactory, the patient relates a history that is both unique and fascinating from the standpoint of differential diagnosis and the subsequent course followed on the basis of the suspected diagnosis. The events that occurred were both catastrophic in nature and alarming from the standpoint of the patient's safety, circumstances demanding immediate laparotomy at any cost and without great delay. The circumstances leading to the case are interesting. Knowing that the patient had a gastro-jejunosomy, the local physician deduced the diagnosis of perforated ulcer on the basis of old diagnosis of ulcer, recent gastro-enterostomy, severe

agonizing upper abdominal pain, and shock of extreme grade.

Recapitulation of history reveals that patient came home at 10 p. m. driving his own automobile, and when entering his garage he made a sudden stop, jamming his right foot on the brake when he saw an object in the direct line of vision of his car. Upon further investigation, the patient found that in his attempt to stop his car slightly too late that the rope from an overhead suspended swing used by his children earlier in the day had become entangled in the front running gear of his car. Slightly piqued at the incident he started to pull at the rope to disentangle it from the gear.

He states at the time he felt no pain, retired as usual about 10:30 p. m., telling his wife that this was the best day he had had to date. At 2 a. m. he was suddenly awakened by excruciating upper abdominal pain. A local physician was summoned and a tentative diagnosis of perforated duodenal ulcer was made. Upon careful questioning of the patient, he stated that he was suddenly seized with severe agonizing pain in the epigastrium followed with nausea and vomiting of clear liquid at first. The pain was knife-like in character and occupied the greater part of the abdomen. Vomiting persisted enroute to the hospital, a distance of 35 miles, and definitely changed in character from a watery to a bloody type, increasing the severe shock that had already supervened. Examination prior to laparotomy which was done under local anesthesia revealed a soft pulse, 96, rhythmic, a soft slightly distended abdomen, very tender to palpation in all quadrants. The recti were not rigid, and no tumor masses were palpable.

At laparotomy the stomach appeared normal, the duodenum presented no abnormalities, or sign of perforation. A moderate amount of pale sanguinous fluid was found in the peritoneal cavity. Approximately 2.5 feet of proximal jejunum were dilated, all coats suffused with blood, sausage-like, and very dusky including the entire vascular mesenteric pedicle. Beginning with small collapsed bowel an obstruction was searched for at the site of the previously made gastro-jejunostomy opening. With very slight tension on the anastomosed jejunal loop apparently all obstruction was relieved, the jejunum assuming its normal position in the abdomen after being freed from its position of aspiration through the mesocolon. Because of the precarious condition of the patient a jejunostomy was done. Hot saline packs to the bowel were sufficiently encouraging in their effects to warrant closure of the abdomen. Siphon drainage was applied via the duodenal tube and intermittent decompression to the jejunostomy for 24 hours.

The patient made a rather stormy recovery after the surgical emergency was taken care of; however, the biochemical aspects of fistula, upper intestinal obstruction, and mineral balance presented a complex biochemical problem including accurate observance of water intake and water output, the ac-

curate measurement of the loss of small intestine secretion and an observance of certain factors in wound healing where fistula is present. Never have I seen recovery with such extensive ileus of the small bowel and its associated vascular distortion of the mesentery.

According to Bailey, in the majority of cases intussusception occurs long after gastro-jejunostomy has been performed. If the condition is borne in mind, it is by no means impossible to make a correct preoperative diagnosis. Symptoms as a rule occur suddenly. The pain is griping, epigastric, and colicky. Vomiting soon occurs, and is frequently repeated—the vomitus is first of all food, then bile and then blood. Rigidity and tenderness are characteristically absent and perforated gastro-jejunal ulcer can then be ruled out.

## COMMUNICATIONS

Sir:

We would appreciate it if you would announce the time and place of the next annual meeting of the American Association for the Study of Goiter. This meeting will be held at Rochester, Minn., April 15, 16 and 17, 1940. The program for the three-day meeting will consist of papers dealing with goiter and other diseases of the thyroid gland, dry clinics conducted by guests of the association, and operative clinics conducted by the staff of the Mayo Clinic.

The association is offering the Van Meter prize award for the best essay presented in competition. We would, of course, appreciate any publicity that you may feel disposed to grant us in your journal concerning this award.

Very truly yours,

W. BLAIR MOSSER, M. D.,

Corresponding Secretary.

Sir:

The New Mexico Medical Society will hold its annual meeting in Albuquerque, May 27, 28 and 29, 1940.

Please publish these dates in *SOUTHWESTERN MEDICINE*.

Fraternally yours,

NEW MEXICO MEDICAL SOCIETY,

L. B. Cohenour, M. D., Secretary-Treasurer.

Sir:

In addition to the articles enumerated in our letter of December 6, the following have been accepted:

Abbott Laboratories—Sterile solution thiamin chloride-Abbott, 250 mg., 5-cc. bottle; sterile isotonic solution thiamin chloride-Abbott, 100 mg., 10-cc. bottle; tablets thiamin chloride-Abbott, 6 mg.

Cutter Laboratories — Sobisminol mass-Cutter



capsules; sobisminol solution-Cutter, ampoules 1 cc.; sobisminol solution-Cutter, ampoules 2 cc.

Eli Lilly and Company—Combined diphtheria toxoid-tetanus toxoid, alum precipitated, two 1-cc. vials package; combined diphtheria toxoid-tetanus toxoid, alum precipitated, one 10-cc. vial package; pulvules sobisminol mass-Lilly; sobisminol solution-Lilly, ampoules 1 cc.; sobisminol solution-Lilly, ampoules 2 cc.; sobisminol solution-Lilly, ampoules 50 cc.

E. R. Squibb & Sons—Sobisminol mass-Squibb capsules; sobisminol solution-Squibb, ampuls 1 cc.; sobisminol solution-Squibb, ampuls 2 cc.; sobisminol solution-Squibb 50 cc.; epinephrine in oil-Squibb.

Yours sincerely,

COUNCIL ON PHARMACY AND CHEMISTRY,  
Paul Nicholas Leech, Secretary.

## NEWS

### General

The American Association for the Study of Goiter again offers the Van Meter prize award of three hundred dollars and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The award will be made at the annual meeting of the association, which will be held at Rochester, Minn., on April 15, 16 and 17, providing essays of sufficient merit are presented in competition.

The competing essays may cover either clinical or research investigation, should not exceed 3,000 words in length, must be presented in English, and a typewritten, double-spaced copy sent to the corresponding secretary, Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., not later than March 15.

A place will be reserved on the program of the annual meeting for presentation of the prize award essay by the author if it is possible for him to attend. The essay will be published in the annual proceedings of the association. This will not prevent its further publication, however, in any journal selected by the author.

### El Paso

A regular meeting of the El Paso County Medical Society was held January 22, 1940, at 8:00 p. m. in the tea room of the Hotel Cortez. The program presented was as follows: "Psychologic Aspects of Pediatrics," Dr. I. M. Epstein; "Bacteriophage Therapy," Dr. L. O. Dutton; "Pituitary Tumor," Dr. A. P. Black.

The regular dinner and staff meeting of the Southwestern General Hospital was held Thursday, January 25, 1940, at 6:30 p. m. in the hospital auditorium. The program was as follows: "Typhoid Fever," Dr. J. E. Morrison; discussion, Dr.

C. D. Awe; "Spontaneous Rupture of the Tendon of Achilles," Dr. F. C. Goodwin.

A regular meeting of the Tumor Clinic was held Tuesday, January 9, 1940, at 1 p. m. at City-County Hospital. The program was a follow-up of old cases.

A regular meeting of the staff of Hotel Dieu Sisters' Hospital was held Tuesday, January 9, 1940, at 12:15 p. m. in the auditorium of the nurses' home. Luncheon was served. The program was as follows: "A Case of Coronary Thrombosis," Dr. Stevens; discussion, Dr. Werley, Dr. Waite and O. J. Shaffer, D.D.S.; "A Case of Ruptured Duodenal Ulcer," Dr. Green; discussion, Dr. Gallagher and Dr. Gorman.

The El Paso County Medical Society met at Hotel Cortez Monday, January 8, 1940, at 8:00 p.m. The program consisted of the following case reports: "Pituitary Tumor," A. P. Black, M.D.; "Pneumolysis" (2 cases), Paul Gallagher, M.D.; "Carcinoma of Sigmoid" (3 cases), J. L. Murphy, M.D.

## AUXILIARY NEWS

### El Paso

The regular meeting of the Woman's Auxiliary to the El Paso County Medical Association was held Monday, January 8, 1940, at 12:30 p. m. at the Hilton Hotel.

During luncheon the musical part of the program was given. Mrs. Harold Gates gave a flute solo and Mrs. Oscar Allen, Jr., sang two numbers. After luncheon, Mr. R. E. Sherman addressed the auxiliary, his subject being "Housing and Slum Clearance." Also guests were Mayor J. E. Anderson and Mr. Frank Fletcher, who is chairman of the Housing and Slum Clearance Project in El Paso. After the program, the business meeting was held, with Mrs. Branch Craige, president, presiding.

The chairman for the luncheon was Mrs. Louis W. Breck, assisted by Mesdames Raymond P. Hughes and Leslie Smith.—*Malvina Spearman.*

## CORRECTION

(Continued from page 65)

1. On page 22 the birth date of Dr. Leslie M. Smith was stated to be August 8, 1885. The date should be August 8, 1895. Dr. Smith is neither chronologically, mentally or physically as old as was alleged.

2. On page 31 a gentleman was called Murray Heal. The name is Neal. In no way does Murray deserve the inadvertant sobriquet.

And now the editorial staff will all go soak our heads.

## MISCELLANY

### ASCHOFF BODIES

These structures were first described by Ludwig Aschoff, then professor of pathology at Freiburg, in an article entitled "Zur Myocarditisfrage (The Problem of Myocarditis)" which may be found in the *Verhandlungen der deutschen pathologischen Gesellschaft* (8:46-53, 1904). A section is translated as follows:

We succeeded in finding peculiar nodules which seemed to be specific for rheumatic myocarditis. These nodules were clearly marked, it is true, in only two cases of recurrent endocarditis, but corresponded in their location exactly to the cellular proliferation found in other cases. They usually lay in the neighborhood of small or medium-sized blood vessels and often showed the most intimate relation to the adventitia of these vessels, or there was found simultaneous involvement of all layers of the blood vessels, such as has been described in arteritis nodosa. The nodules are extremely small, at most submiliary in size, and arise through the collection of notably larger elements with one or more abnormally large, slightly notched or polymorphic nuclei. The aggregation of cells often occurs in the form of a fan or rosette. The periphery is formed by the large nuclei; the center by the confluent protoplasm of the cells which

often seems to stain weakly or otherwise appears to be a necrotic mass. The fan-shaped foci recall, when superficially observed, the tiny necrotic areas of gout with the peripheral cell mantle as they are frequently found in gouty kidneys.—*N. E. J. of Med.*

### ORAL BISMUTH THERAPY IN SYPHILIS

Now, for the first time, appears a metallic preparation which seems to be useful when administered orally for the treatment of syphilis. This form of therapy is certainly not advisable except for intelligent, co-operative patients. It is essential that the patient take the medication regularly, as directed by the physician, or that the physician insist on the intramuscular route for therapy for uncooperative patients. There are, of course, certain instances in which the oral route of medication would be a valuable adjunct in syphilis therapy. It can be used with caution for those individuals whose business or profession necessitates occasional absences from the physician's supervision. It should prove useful for those rare persons who have unusual difficulty in taking intramuscular injections because of resultant pain and induration of the muscles. It is also possible that in selected cases of congenital syphilis and in some cases of cardiovascular and latent syphilis the oral route of medication would be distinctly useful. In the course of experiments on the utilization of sodium bismuthate in antisypilitic ther-

### FACTORS IN THE PATHOGENESIS OF EDEMA — LANDIS

#### FACTORS FAVORING EDEMA FORMATION

##### A. Primary

1. Elevated capillary pressure
2. Lowered colloid osmotic pressure
3. Damage to capillary wall
4. Lymphatic obstruction
5. Lymphangiectasis

##### B. Contributory

6. Low tissue pressure
7. High tissue fluid colloid pressure
8. High salt intake
9. High fluid intake
10. Warm environment
11. Disturbed innervation
12. Endocrine imbalance

#### CLINICAL EXAMPLES

1. (a) Varicose veins, external pressure on veins  
(b) Thrombophlebitis, superficial  
(c) Thrombophlebitis, deep (Phlegmasia Alba Dolens)  
(d) Cardiac edema with venous congestion
2. (a) Nutritional (hypoprotein) edema  
(b) Nephritic edema  
(c) Cardiac edema, late stages with malnutrition
3. (a) Inflammatory edema  
(b) Nephritic edema  
(c) Cardiac edema (chronic anoxemia)  
(d) Peripheral arteriosclerosis or occlusion (anoxemia)
4. (a) Lymphedema due to malignant occlusion, surgical removal of lymph nodes, lymphangitis with lymphatic thrombosis, etc.  
(b) Lymphedema of Phlegmasia Alba Dolens
5. (a) Congenita lymphedema  
(b) Valvular incompetence following lymphangitis  
(c) Heat of tropics
6. (a) Edema of periorbital tissues and genitalia
7. (a) Elephantiasis nostros
8. (a) Increases edema if water is available
9. (a) Increases edema if salt is available
10. (a) Heat edema  
(b) Increases all types of edema
11. (a) Tropho-edema as after subarachnoid alcohol block  
(b) Unilateral edema in hemiplegia  
(c) Angioneurotic edema
12. (a) Myxedema  
(b) Menstrual edema



apy, Hanzlik, at Stanford University, evolved preparations resulting from the interaction of sodium bismuthate, tri-isopropanolamine and propylene glycol, known as sobisminol mass and sobisminol solution. These products have been before the Council on Pharmacy and Chemistry for approximately 3 years, a period which was necessary for the accumulation and proper evaluation of evidence for the efficacy of the orally administered product. These products, as well as various marketed brands, have now been accepted by the council. According to agreements between the board of trustees of Stanford University and each of the three firms already licensed to manufacture the product, every legal effort is being made to prevent the sale of capsules of sobisminol mass to the public other than on or by the prescription of the physician. Distribution of such a product to the public would obviously result in inadequate treatment of unrecorded and uncontrolled bases, and thus would become a serious menace to the individual and to the public health. Lastly, it is pointed out that oral administration of bismuth compounds is not intended to replace the generally accepted use of bismuth preparations intramuscularly, except where special conditions prevail.—J. A. M. A.

#### ADAMS-STOKES DISEASE

Robert Adams (1791-1875), one of the surgeons to Jervis Street Infirmary, Dublin, describes "Cases of Diseases of the Heart, Accompanied with Pathological Observations" in the *Dublin Hospital Reports* (4:353-453, 1827). On page 391 appears the following:

February 20, 1822, I was called to visit a gentleman in my neighborhood, aged 50 years, who had suddenly fallen down, as reported to me, in an apoplectic fit. I found him in a state of complete insensibility; his face (naturally pale and sickly) was now red and bloated; his breathing stertorous, with a slow pulse. . . . In the last year he had two apoplectic attacks, exactly resembling that which I had just witnessed; from these he recovered without any paralysis of the muscles. . . .

An officer in the revenue, aged 68 years, of a full habit of body, had for a long time been incapable of any exertion, as he was subject to oppression of his breathing and continued cough. In May, 1819, . . . I saw this gentleman; he was just then recovering from the effects of an apoplectic attack, which had suddenly seized him 3 days before. . . . What most attracted my attention was the irregularity of his breathing, and remarkable slowness of the pulse, which generally ranged at the rate of 30 in a minute. . . . (During 7 years he had been seen) in not less than 20 apoplectic attacks. . . . He would then fall down in a state of complete insensibility. . . . His pulse would become even slower than usual. . . . He recovered from these attacks without any paralysis. . . . In both these cases . . . apoplexy must be considered less a disease in itself than symptomatic of one, the organic seat of which was in the heart.

William Stokes (1804-1878) in his article, "Observations on Some Cases of Permanently Slow Pulse," which appeared in the *Dublin Quarterly Journal of Medical Science* (2:73-85, 1846), refers to these case histories as follows:

In the fourth volume of the *Dublin Hospital Reports*, Mr. Adams has recorded a case of permanently slow pulse, in which the patient suffered from repeated cerebral attacks of an apoplectic nature, though not followed by paralysis. The attention of subsequent writers on diseases of the heart has not been sufficiently directed to this case, which is an example of a very curious, and, there is reason to believe, special combination of symptoms.—N. E. J. of Med.

#### PREVENTION OF SILICOSIS

The interest of industrial hygienists has recently been aroused by the report of Denny, *et al.*, that the inhalation of powdered metallic aluminum prevents silicosis. From experimental evidence, it appears that the toxicity of silica comes from that portion which is in the dispersed colloidal form and this can be inactivated by aluminum when the latter is in close association with quartz in the body cells.

Rabbits which were exposed to quartz dust alone all developed silicosis within a period of 7 months. On the other hand, where the quartz dust was mixed with metallic aluminum powder in a concentration of 1%, no animals showed any evidence of silicosis up to periods of 17½ months. For the prevention of the disease, Denny and his co-workers suggest that the aluminum dust should be below 5 microns in particle size and be free from grease. The dust should preferably be uniformly mixed with silica dust, but will also be effective if inhaled each day independently. In itself, aluminum dust showed no effect on the health of the animals, and no toxicity or tissue damage.

Metallic aluminum in the tissues is converted into hydrated alumina, which, by flocculation, by the adsorption of silica from solution, and by covering the quartz particle with an insoluble and impermeable coating, is able to reduce the toxicity of quartz in the tissues.—N. Y. St. J. Med.

#### A PROFESSION OR A TRADE?

The United States owes an incalculable debt to the American Medical Association. Whatever criticisms may now be aimed at it by the idealistically-minded who are shocked at obvious imperfections in the medical services available to the people as a whole, the fact remains that the organized profession itself, voluntarily and from a sense of duty, is responsible for about everything "social" in the practice of the healing arts today. It found American medicine in a chaotic condition. There were essentially no minimum standards of education or of competence. In most states a few years as helper in a doctor's office or around a hospital and the passing of a written examination were sufficient to launch a man on the practice of medicine. The American Medical Association has

worked ceaselessly for higher and higher minimum requirements. It has practically eliminated low-grade medical schools. It has made the acquiring of a doctor of medicine degree and a state license to practice a major struggle for any man and a hopeless struggle for an individual of mediocre intelligence. The public now is absolutely assured that any man who has been graduated from an American medical college and passed a state board examination is highly competent. It is reasonably assured that he is not lazy or careless, unless his personality undergoes a remarkable change after he leaves college; and it is reasonably assured that he is not scoundrel, for dishonesty could hardly get through the filter of present-day medical education, for which the American Medical Association is responsible.

— *Jo. Iowa St. Med. Soc.*

#### MEDICINE—AND MORE

I know of no calling which offers such a wide diversity of intellectual pleasure as that of medicine, not alone in its art and science, with an ever increasing range of new developments, but in human behavior, psychology, sociology, economics, and related activities; we follow a most useful calling, an interesting occupation filled with new and striking problems and one of the best because its only aim is the benefit of man.

Medicine is the most ancient of professions, being older than Christianity and antedating the

inception of civil law. It has its own system of rewards and punishments, its own disappointments and its own glories. It is a profession that has a broadening influence on the human mind and is characterized by a most splendid charity. It is an acquisition in the best tendencies and a protection against the worst tendencies.

It constructs no trusts; it finds no monopolies; it excludes no qualified practitioner; it retains for its profit no valuable discovery and it has no standing room for the quack, the scoundrel and the charlatan.

Its best work is done in the light which beats upon its throne, not in the arena of politics encouraged by the cheers of thousands, not in the seclusion of the cloister sustained by the hope of eternal joy, but in the storm- and wind-swept country, in the streets of the village, in the boulevards of the city, on the desolate field of battle where pain and pestilence, illness and misery are combated often with none but God to see it. It furnishes a curiously checkered life, a life in which storm clouds alternate with sunbeams. With the exception of the ministry it stands closer than any other calling to the secret of eternity and watches death ever busy with her shuttle as she weaves her somber threads into the woof and warp of the affairs of men.

It seeks to mitigate human suffering, to prolong human life. These have ever been its watchwords, are still and always will be, constituting its cloud of smoke by day and its pillar of fire by night. One should enter such a profession with properly exalted ideals: with a belief in its greatness, its dig-

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\*"Treatment of Acute Anterior Urethritis with Silver Picrate," Knight and Shelanski, AMERICAN JOURNAL OF SYPHILIS, GONORRHEA AND VENEREAL DISEASES, Vol. 23, No. 2, pages 201-206, March, 1939.

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nity, its stability, its real importance, its essential strength. One should resolve to learn to observe, to compare, to analyze, to study, to think, to avoid formulas, to cast out sordid thoughts, to repudiate shallowness, advertising, and vain pretensions.

In short, to be a worthy disciple of Aesculapius, reflecting honor and credit on the profession and deriving from it the happiness that makes life worth while, being held in grateful remembrance by those whom one has served and in respect and esteem by the confreres with and among whom one has lived and worked.—*Irvin Abell, M. D. (President A. M. A.)*

## BOOK NOTES

**AN INTRODUCTION TO GASTRO-ENTEROLOGY.** by Walter C. Alvarez, M. D., Professor of Medicine, University of Minnesota, the Mayo Foundation, and a Senior Consultant in the Division of Medicine, the Mayo Clinic. 3rd edition of *The Mechanics of the Digestive Tract*. Pp. 778, including index. Illustrations 186. Cloth. \$10.00. New York, Paul B. Hoeber, Inc. Medical Book Department of Harper & Bros. 1939.

Any one who has read previous publications of the author—and we all have; any one who is interested in the digestive tract—and we all are—will find several hours of valuable and pleasurable problems simplified by adding this superior and exceptional volume to his library.

Written in the usual pleasing style of the author the subject matter immediately and continuously holds the interest of the reader. Aside from the expression of his own personal views, based on years of clinical experience and scientific research, the author presents the experimental and clinical studies and conclusions of several hundred clini-

cians and scientists as acknowledged in a bibliography including over two thousand references.

This volume, indispensable to the gastroenterologist and to the research student, should be of inestimable value to the surgeon, and every physician, regardless of his specialty, could improve his clinical acumen by a careful review of the short summary appearing at the conclusion of each chapter referring to the text for a more detailed study as a single point attracts his special attention.

The author elaborates his previous conception of polarization of the bowel and discusses the probable relationship of the gradients to polarization.

The application of the principles of physiology to every day symptoms is stressed and further elucidated by the inclusion of case histories pertinent to the point under discussion. Suggestions regarding treatment in the light of physiologic concepts are included. The problems yet to be solved are clearly stated.

The final chapter is devoted to a review of books and journals best adapted to the student who desires to increase his fund of knowledge in gastroenterology and associated fields.

Too quickly, we come to the end of a monumental volume to be placed on the shelf but not for long, for as a ready reference it should answer many of our future problems.—*J. J. G.*

**CITRUS FRUITS AND HEALTH,** Clinical and Scientific Data from the Literature of Nutrition as related to Citrus Fruits. Pp. 73 including Bibliography. Paper. Lakeland, Florida, Florida Citrus Commission. 1940.

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"Citrus Fruits and Health," just issued under the seal of the State of Florida.

The book is one phase of a research program which has been carried on for the last 3 years by the Florida Citrus Commission, with grants to outstanding scientific institutions for new studies on the health values of oranges, grapefruit and tangerines.

The book is a concise but comprehensive treatment of "the physiology, pathology and therapeutics of the accessory substances as related to the citrus fruits," along with examples, figures and opinions from clinical and scientific sources.

Written especially for the medical and dental professions, the book was prepared with the counsel and co-operation of an advisory board which included internationally recognized authorities in medical and dental research, nutrition and biochemistry.

Although much has been written in the past on the health attributes of citrus fruits, this work is the first to bring into a single volume the various known aspects of the fruits in their relation to health and disease.

"Citrus Fruits and Health" discusses the fruits in their relation to public health, special diets, infancy and growth, calcium assimilation, pregnancy and lactation, the teeth, disease, increased metabolic states, toxemias, surgical diseases, the infections, resistance to infection, and contains sug-

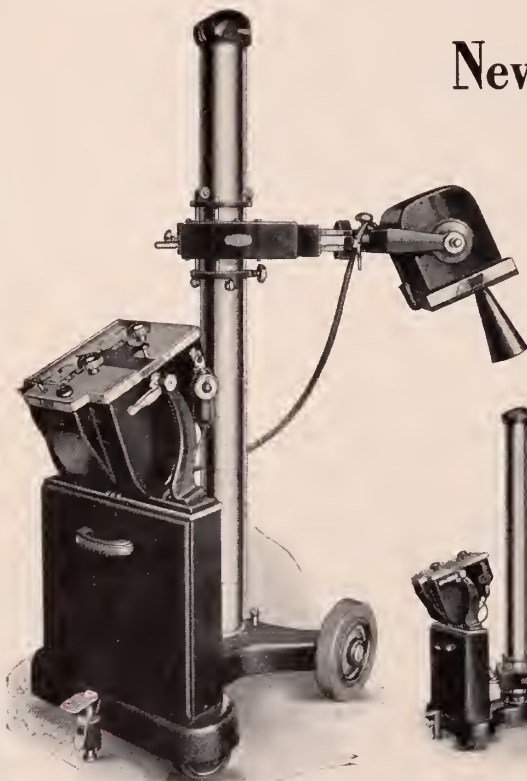
gested dietary uses of oranges, grapefruit and tangerines.

**JEWISH CONTRIBUTIONS TO MEDICINE IN AMERICA** from Colonial Times to the Present; by Solomon R. Kagan, M. D.; Foreword by Prof. James J. Walsh; second edition revised and enlarged; published by the Boston Medical Publishing Company; Boston, Massachusetts; 1939.

As this is the second edition of this book I suppose the "labor of love" of writing it has been rewarded by a slight financial return to the author. Collecting the biographies, even though many of them are autobiographies, of around 900 to 1,000 physicians is no small task. The very stimulus which was active in causing the author to write the book is undoubtedly the same as has caused its going through a second edition, namely, the desire of the Jew to know what his race or people has contributed to medical advancement of America. One wonders if the Jewish people are not sufficiently integrated without a recitation of the splendid achievements of their men of the medical profession. Such a proposition may not be for the best interests of either the American Jews or the American people as a whole. Suppose those of the Catholic faith were to compile the accomplishments of their men of medicine, and then the Methodists, Baptists, Presbyterians, Episcopalians, etc., might feel called upon to do the same for those of their faiths. What would be the end results?

Whatever may be said for or against the desir-

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ability and propriety of such a volume the fact remains that one may find in it the facts about the lives and accomplishments of many of the great American physicians. It is a book of nearly 800 pages. There are many facts in it besides those specifically about physicians. The two chapters I would mention are those entitled "Jewish Medical Institutions" and "Jewish Medical Philanthropy."

The book is a valuable contribution to the medical history of America and will be so recognized by all students of the subject.—O. H. B.

**MEDICAL CARE** (A Symposium). Law and Contemporary Problems (Duke University Law School, Durham, N. C.), Autumn, 1939, Vol. VI, No. 4, 186 pages. 75 cents, postpaid.

Private and governmental plans to remove economic barriers to the availability of medical care are studied in a symposium on "Medical Care," published as the autumn, 1939, issue of Law and Contemporary Problems, the Duke University Law School quarterly. The rapid spread of medical and hospital care corporations furnishing service on the prepayment plan and the pendency of the Wagner National Health Bill in Congress together provide the occasion for the publication of the 14 articles comprising this symposium.

After an introductory article analyzing the salient questions presented by the national health problem comes a group of articles directed to experimentation with plans under private auspices. Representative plans are depicted, and the ethical and legal bases of opposition to them are examined. Enabling legislation, already enacted for hospital care plans in 24 states and for medical care plans in 4, is analyzed, together with problems in the administration of the plans which already have been established.

Special attention is devoted to the recently organized California Physicians' Service in which 5,000 of California's 7,000 physicians have thus far enrolled. An article is also devoted to the medical care program developed for over 100,000 Farm Security Administration borrowers by the FSA and county medical societies in 22 states.

Among the contributors to this section of the

symposium are M. W. Brown, general secretary of the Bureau of Co-operative Medicine; Dr. C. R. Rorem, director of the American Hospital Association's Commission on Hospital Service, and Dr. R. C. Williams, chief medical officer of the Farm Security Administration.

Five articles in the symposium discuss problems presented by the National Health Bill, introduced by Senator Robert F. Wagner of New York, which would amend the Social Security Act by authorizing federal grants in aid of state public health programs and systems of health and disability insurance. Included among these articles is an analysis of the various bills introduced in state legislatures last winter looking to the establishment of compulsory health insurance systems. A detailed study is also presented of the problems of need, administration and cost to be considered in formulating state or federal disability insurance systems.

Among contributors to this group of articles are Dr. I. S. Falk, author of "Security Against Sickness" and assistant director of the Social Security Board's Bureau of Research and Statistics; Dr. L. S. Reed, author of "Health Insurance," and Prof. Clarence Heer, University of Carolina economist, recently appointed by Administrator Paul McNutt to the Federal Security Agency's "brain trust."

#### THE PSYCHOLOGICAL ASPECTS OF COD LIVER OIL ADMINISTRATION

Some authorities recommend that cod liver oil be given in the morning and at bedtime when the stomach is empty, while others prefer to give it after meals in order not to retard gastric secretion. If the mother will place the very young baby on her lap and hold the child's mouth open by gently pressing the cheeks together between her thumb and fingers while she administers the oil, all of it will be taken. The infant soon becomes accustomed to taking the oil without having its mouth held open. It is most important that the mother administer the oil in a matter-of-fact manner, without apology or expression of sympathy.

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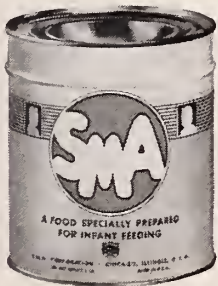
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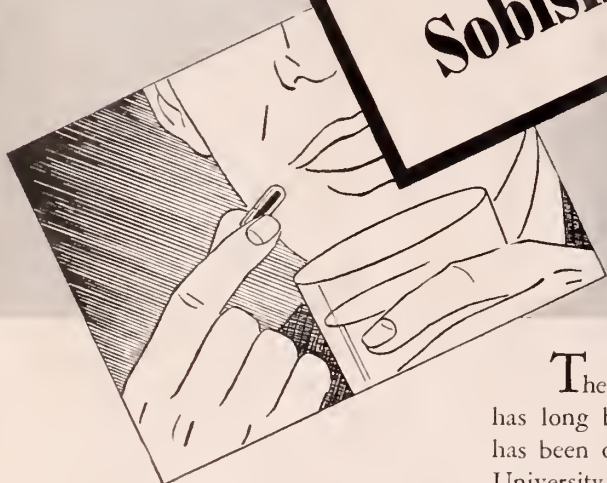
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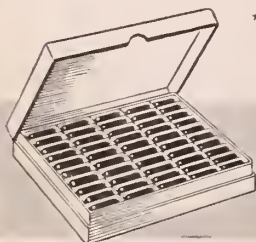
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OFFICIAL JOURNAL OF

Arizona State Medical Association

El Paso County (Texas) Medical Society

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Southwestern Medical Association

VOL. XXIV

EL PASO, TEXAS, MARCH, 1940

No. 3

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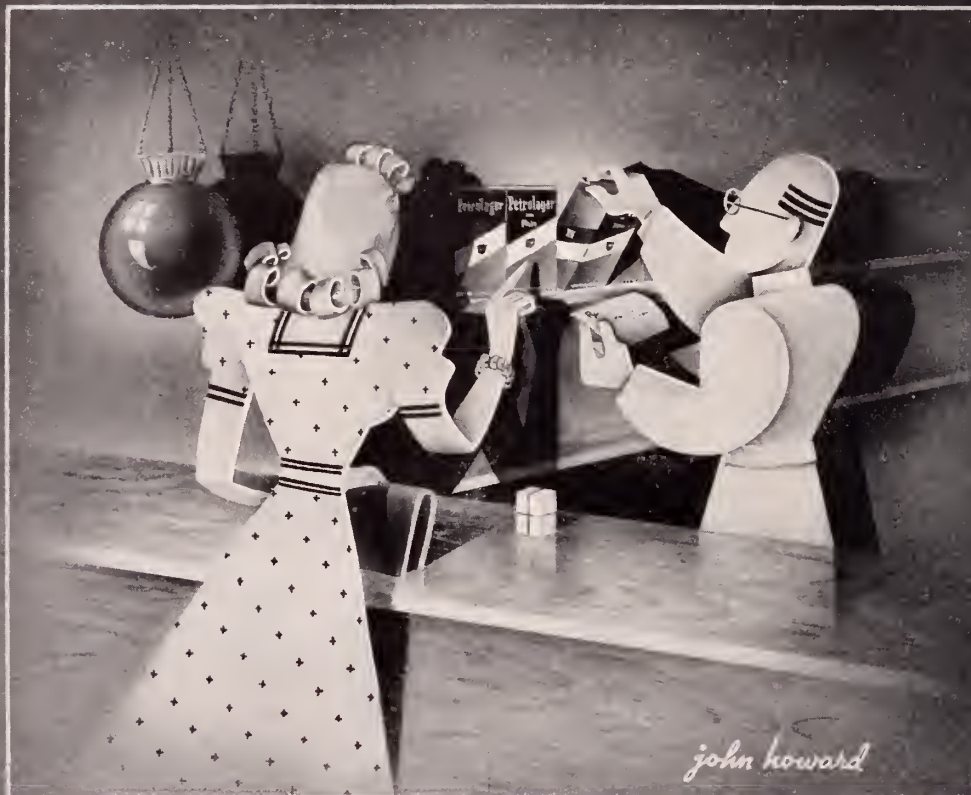
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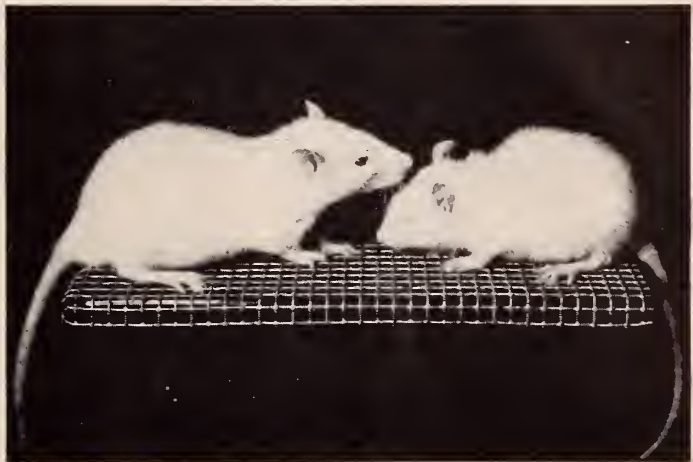


# STUDIES IN THE AVITAMINOSES

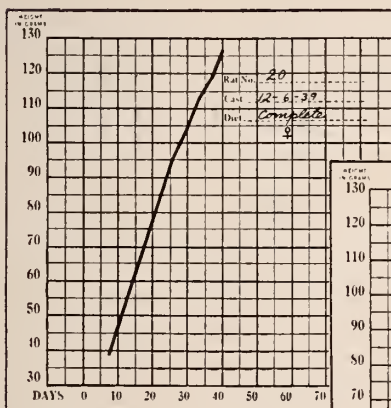


This page is the third of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A full color, two-page insert on the same subject appears in the March 9 issue of The Journal of the American Medical Association.

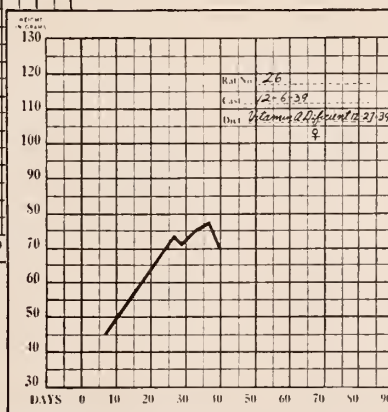
**I**NHIBITION of growth in the rat produced by restriction of vitamin A in the diet. The animals, litter mates, were 21 days old at the start of the experiment which was continued for 33 days. The animal at right received a diet containing all nutritive substances except vitamin A; the animal at left, an adequate diet. Note the xerophthalmia in vitamin A deprived rat.



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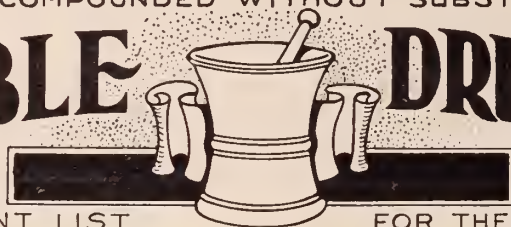
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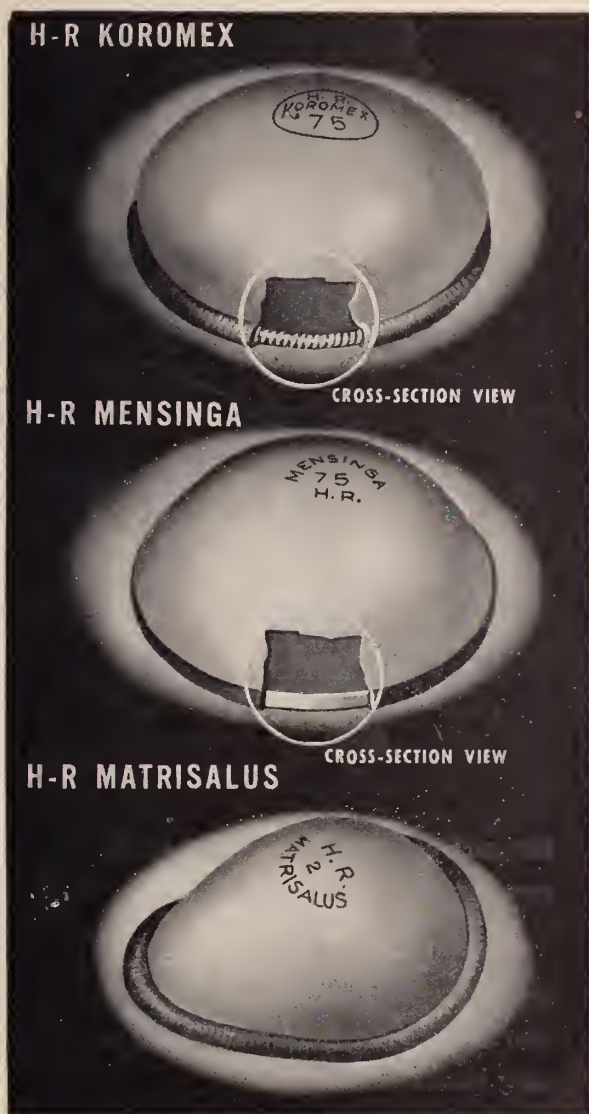
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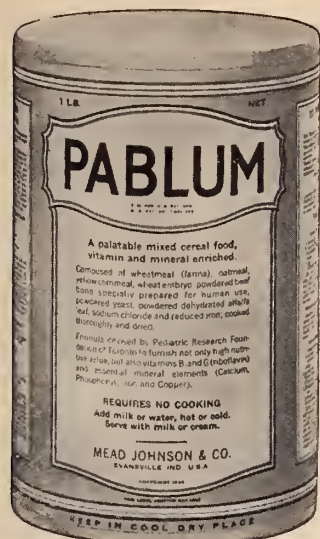
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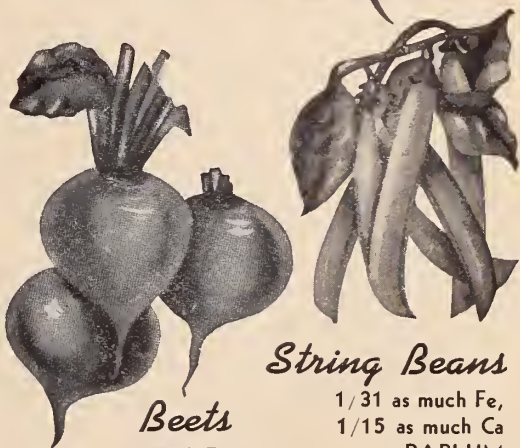


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THE SOUTHWESTERN MEDICAL ASSOCIATION

VOL. XXIV

EL PASO, TEXAS, MARCH, 1940

No. 3

## Pneumonia

(A Symposium)

L. R. KOBER, M.D.,  
S. R. CANIGLIA, M.D.  
and

KENT THAYER, M.D.  
Phoenix, Arizona

### I—STATISTICAL SURVEY FOR 1939 - ST. JOSEPH'S HOSPITAL

FOR the past three years it has been my privilege to give a statistical survey on pneumonia in the charts of St. Joseph's Hospital. My attention was drawn toward this subject by an editorial which appeared in the J. A. M. A. in 1937,<sup>1</sup> in which it was stated that the highest annual pneumonia death rates were occurring in the southwestern and northwestern parts of this country.

Many of our physicians did not believe this, and some even told me that we seldom saw a true case of pneumonia, meaning, of course, the usual lobar pneumonia. At that time the Neufeld method of rapid determination of specific pneumococcus type was rapidly becoming the means of determining whether a specific anti-pneumococcic serum could be used or whether the older symptomatic types of treatment would have to be used. It was about this time that experiments were being done in numerous clinical centers with the higher types of rabbit sera and many types of anti-pneumococcic sera were not yet generally available at that time.

The statistics for St. Joseph's Hospital for the years 1936 and 1937 showed a total of 590 cases of pneumonia during those two years, with more than half (385 cases) diagnosed atypical or broncho-pneumonia, and a mortality in this group of slightly over 37% (144 deaths). During these two years there were 205 cases of lobar pneumonia with a mortality slightly over 30% (62 deaths). There was no attempt made at selection of cases. Some of these were terminal or secondary to some other serious ailment. But these figures did give us the information that was necessary to convince us that we do have pneumonia in this sunny climate and that many of these cases do not get well.

Since our attention was directed at that time to the treatment of pneumonia with specific anti-pneumococcic sera, a check-up revealed that only 21 cases during the two-year period (1936 and 1937) had received the benefit of serum treatment. A

concerted effort was made by the hospital and its staff to develop methods of providing serum treatment earlier and more frequently in the cases where it was indicated and available, so that during the year 1938 twice as many cases (48) received serum as had in the two previous years combined. Also during 1938 many cases of pneumonia, particularly the atypical one for which no specific type could be determined or for which no specific anti-pneumococcic serum was available, were given sulfanilamide or neo-prontosil. As a result, the gross mortality for 1938 fell to 27.8%, as compared to 34.9% for the previous two-year period. Separating the lobar pneumonias, which were usually more amenable to specific treatment, we found that the mortality rate had been cut to 17% for 1938, as compared to 30% for 1936 and 1937. It is only fair to say that possibly some of this reduction was due to the fact that during 1938, with the co-operation of the hospital management, more laboratory and x-ray examinations were made and more attention to exact diagnosis was thereby attained. Likewise, it must be noted that no attempt was made to eliminate terminal or secondary pneumonias.

During the study of the statistics for 1938 it was also noted that many of the childhood pneumonias were associated with diarrhea, the so-called "summer diarrhea" with dehydration, broncho-pneumonia, and death, and that the highest mortality occurred in county patients, where the fewest number of patients received specific treatment.

The pneumonia statistics for 1939 open an entirely new chapter in the treatment of this disease, for sulfapyridine has practically replaced all other therapy. Anti-pneumococcic sera is occasionally used, but chiefly for very desperate cases in combination with sulfapyridine. One should not be too optimistic about the results of a new drug by its success in one season, especially in a disease such as pneumonia, where it is known that the severity of the disease and the virulence of the organisms frequently vary from year to year. However, for one who has closely followed the mor-

<sup>1</sup>Read before Staff Meeting at St. Joseph's Hospital, Phoenix, Arizona, January 8, 1940.

<sup>2</sup>J. Journal of the American Medical Association 109:1910, (Dec. 4, 1937).

tality record for pneumonia in this hospital for a number of years, the year 1939 stands out as one of exceptional progress and leads one to hope that before long pneumonia will have dropped from first place amongst infectious disease mortality to a place where death from pneumonia is no longer a vital factor in mortality statistics.

Here is the record for the year 1939 in St. Joseph's Hospital:

Total number of pneumonias of all types, 322 cases, with a gross mortality of 65 deaths, or 20%, compared to 37% for 1936-37 and 30% for 1938, a reduction of 10% over last year. Of these 322 cases, 102 were classed as lobar and 220 as atypical cases, with only 6 deaths (6% mortality) in the lobar cases and 59 deaths (27%) in the atypical classification. Compare this rate of 6% with the 30% in 1936-37 and 17% in 1938 for lobar pneumonia, and compare the 27% rate with the 37% for 1936-37 and the 32% in 1938 for atypical pneumonia cases. However, if we remove the 75 cases of pneumonia with 42 deaths which were secondary or terminal to some other disease and really are not to be charged against pneumonia, we have only 145 atypical (broncho) pneumonias with 17 deaths, or a mortality rate of 11.7%. Likewise eliminating these 75 secondary cases with 42 deaths from the total number of pneumonias, we have actually 247 primary cases of pneumonia treated in St. Joseph's Hospital during 1939 with 23 deaths, or 9.3% mortality. Certainly a big improvement over any previous years.

Using the unselected cases (that is, leaving in the secondary and terminal pneumonias), the statistics according to type of treatment are as follows: Those in which only symptomatic treatment was used—89 cases with 39 deaths, or mortality of 43.8%. This group, of course, contains most of the terminal cases secondary to some other pathology; 150 cases were treated with sulfapyridine, with 15 deaths (10% mortality); 21 cases with specific anti-pneumococcic serum, with 3 deaths (14% mortality); 55 cases were treated with sulfanilamide or neo-prontosil, with 9 deaths (16%); 4 cases were treated with saulapyridine and specific serum, and 3 cases with sulfanilamide and serum, amongst which cases there were no deaths.

The mortality by ages is as follows: Infants and children to 16 years of age, 168 cases, with 31 deaths, or a mortality of 18.4%. Adults 16 to 49 years of age, 91 cases, with 12 deaths, or 13% mortality. Persons 50 years or over, 58 cases, with 20 deaths, or 34.5% mortality. Three charts did not state the age and one death occurred amongst these three.

The mortality according to economic status is as follows: County cases, 108, with 29 deaths (26.8% mortality); Agricultural Health and Medical Association, 51 cases, with 10 deaths (20%), and private patients, 163 cases, with 26 deaths, or 16% mortality.

Of the 93 cases which gave reactions to a specific type anti-pneumococcic serum, 19 were Type I, 12 Type III, 11 Type V, 8 Type VII, 5 each of

Types II, VI and XVIII, 4 Type XIV, 3 Type VIII, 2 each of Types IV, IX, X, XI, XII and XIX, and one each of Types XV, XVI, XX, XXI, XXII, XXIII, XVII, XXIX and XXXII.

Out of the 322 cases, 128 had x-rays made, and 28 autopsies were obtained from the 65 deaths. Before I close, I want to point out the importance of doing an autopsy on every hospital fatality. In several of the cases included in this report no clinical finding of pneumonia had been recorded although in a few it was undoubtedly the cause of death. Likewise, since it has been found that most cases of infantile diarrhea die of pneumonia, the mortality rate in these children has been remarkably reduced this year through the use of sulfapyridine. If it had not been for post-mortem examinations, many of these cases would still be receiving treatment for diarrhea and dying with pneumonia.

I believe it was Joslin who said that "any physician who knows that his method of treatment will be checked up by an autopsy will unwittingly take more pains with his patient. It is human nature to do better work when one is under supervision, if only his own supervision. Doctors make mistakes, but in general the doctors who have the most autopsies are the ones who err the least. It is insurance for the best sort of treatment during life to stipulate that after death an autopsy shall be performed."

#### SUMMARY

The statistics on pneumonia in St. Joseph's Hospital over a 4-year period show the remarkable progress which has been made in the treatment of this disease. Chart I shows that from a gross mortality of 35% in 1936-37 the rate was cut to 28% with the wider use of anti-pneumococcic sera in 1938, and to 20% in 1939 with the coming of sulfapyridine.

Chart I

#### PNEUMONIA IN ST. JOSEPH'S HOSPITAL

Year	Total	Deaths	LOBAR		ATYPICAL	
			Cases	Deaths	Cases	Deaths
1936-37	590	206 (35%)	205	62 (30%)	385	144 (37%)
1938	353	98 (28%)	106	18 (17%)	247	80 (32%)
1939	322	65 (20%)	102	6 (6%)	220	59 (27%)

NOTE: These are unselected cases, and include all cases of pneumonia whether secondary to some other ailment or a terminal event in the course of some other pathological condition.

Chart II

#### PNEUMONIA IN ST. JOSEPH'S HOSPITAL—1939

Of 322 cases, 75 were not primarily pneumonia

Out of these 75 cases, 42 died (56%)

Primary pneumonia cases ..... 247  
Primary pneumonia deaths ..... 23  
Primary pneumonia mortality ..... 9%

Lobar pneumonia cases ..... 102  
Lobar pneumonia deaths ..... 6  
Lobar pneumonia mortality ..... 6%

Atypical primary pneumonia cases ..... 145  
Atypical primary pneumonia deaths ..... 17  
Atypical primary pneumonia mortality ..... 12%

Chart II shows the mortality for the 247 primary pneumonias during 1939 in this hospital is surprisingly low, 6% for lobar and 12% for atypical or broncho-pneumonias, or a rate of 9% for pri-



mary pneumonias, during the year of 1939. This is not the work of one or two internists, but 60

members of the staff of this hospital have made these records possible.

## II—SULFAPYRIDINE

In the May, 1938, issue of the *Lancet*, Lionel Whitby reported some experiments on a new compound which he called M & B 693. He reported this compound as a chemotherapeutically active agent in pneumococcal infections, especially against Types I, II, III, V, VII and VIII. This compound, later named sulfapyridine in this country and put on the market just last April, has been without question one of the greatest contributions to the chemotherapy field of medicine.

Insofar as is known, the essential value of the drug lies in its ability to inhibit the growth of the pneumococcus, irrespective of type. Ultimate recovery, however, depends on the patient's ability to develop specific antibodies which neutralize the micro-organism's free carbohydrate substance.

Before beginning sulfapyridine therapy, several diagnostic tests should be made, namely:

1. Typing of sputum to determine infecting organism.
2. Taking of blood culture, because later cultures are unreliable because of the bacteriostatic effect of the drug.
3. Taking complete red and white blood cell counts, hemoglobin determination, differential white cell count and urinalysis.

Sulfapyridine should be started immediately; you need not wait for the results of the typing and blood cultures to come back.

The exact dosage of the drug is not known nor is it definitely known how soon treatment may be safely discontinued; however, it is very important that the drug be administered as early as possible in the disease; that relatively large amounts be given within the shortest possible period of time, and that a satisfactory maintenance dose be continued.

The most effective way of controlling dosage requirements is to make a daily blood estimation for the presence of the drug in the free and conjugated form. Blood concentrations ranging between 3 and 6 mgms. per cent of free drug are usually considered adequate. The conjugated drug is inactive. Where blood level determinations cannot be made, the clinical response will necessarily have to serve as a guide for dosage required.

Various dosage scales have been recommended by different men. They all vary but very little from one another. Plummer and Ensworth of Bellevue and New York Hospital have a routine of giving 2 gms. as an initial dose, followed by 1 gm. every 4 hours until 16 gms. have been given. If clinical response is not satisfactory, a continued dose of 0.5 gms. is given until definite improvement is noted. Finland and Maxwell of Boston give 2 gms. of sulfapyridine as an initial dosage until the temperature, pulse rate and respirations have been essentially normal for a period of 48 hours. Flippin and Lockwood of Philadelphia followed the scheme outlined by Evand and Gaisford

of England by giving 2 gms., then 1 gm. every 4 hours until a total of 25 gms. have been given. The mortality and morbidity rate was practically the same in all three studies.

For children, Barnett of St. Louis recommends 0.15 gms. every 4 hours for children between 1 and 6 months; 0.3 gms. every 4 hours between 6 months and 1 year; 0.3 gms. every 3 hours between 1 and 2 years; 0.6 gms. every 4 hours for children between 3 and 5 years; and 0.9 gms. every 4 hours for those up to 12 years of age. The initial dose should be at least twice and sometimes three times the amount of the 4-hour dose; of course, depending on the child's condition.

Chas. Smith and Rosa Lee Nemir of New York City followed a routine of giving 0.2 gms. sulfapyridine per kilogram of body weight on the first day, and half this amount on subsequent days. No child was given more than 4.5 gms. a day, and the average total amount given to a child was 5.48 gms. The average total dosage for an infant under 2 years was 3.99 gms.

The toxic manifestations of sulfapyridine therapy are similar to those which are associated with sulfanilamide therapy. Nausea and vomiting are the most frequent toxic reactions encountered. Nausea occurs in about two-thirds of the cases and vomiting in about one-third; 10-15% of patients have such severe vomiting reaction that it interferes with effective oral administration of the drug. Giving the drug in powder form, suspended in milk, apple sauce or fruit juices, may help this vomiting. Barnett gives a 2% solution by rectum with gratifying results. This suspended form of the powder drug works wonderfully well, if the toxic reaction is of local origin, as most men believe, but Plummer and Ensworth of New York claim that it is definitely central in origin. They state that it rarely occurs until 4-6 gms. of the drug have been given, and that it has been shown that giving sodium sulfapyridine by vein causes vomiting; therefore, they have found no satisfactory way of controlling this vomiting short of decreasing the drug dosage and allowing the blood level to fall. (Marshall and Long of Baltimore, I. V. in 30 cases, vomiting during or after administer in almost all cases.)

Hemolytic anemia and a neutropenia may develop which may be severe enough to classify as agranulocytosis. Immediate discontinuance of the drug, followed by blood transfusions usually have resulted in prompt recovery.

Cyanosis has also been attributed to the use of this drug, but in lobar pneumonia it is very difficult to say the cyanosis is due to the drug or is the result of the disease itself. Accepting the theory that the drug does cause a cyanosis, it has not yet been definitely proven that the cyanosis is due to the formation of a sulfhemaglobin as in the case with sulfanilamide, but until so proven,

one way or the other, it is suggested that saline laxatives and sulphur-containing foods be avoided during the administration of sulfapyridine.

Interference with kidney function has also been reported. Hematuria, in some instances associated with anuria, nitrogen retention and nephritic edema, have been observed. This is presumably associated with the insolubility of the acetylated form of drug. Administration of adequate amounts of fluid and discontinuation of the drug usually results in rapid recovery. Small crystalline stones have been recovered in experimental animals and in human cases from the pelvis of the kidney, from the ureter and also from the bladder.

Other forms of reaction occasionally encountered are: skin rash, vertigo, headache, general malaise, and mental depression.

Other pneumococcal infections treated with sulfapyridine include pneumococcal meningitis, pneumococcal peritonitis, otitis media and mastoiditis, and pneumococcal endocarditis. As a rule, these cases require the use of specific serum together with the sulfapyridine before favorable results can be obtained.

Pneumococcal meningitis: sulfapyridine immediately, then specific serum intravenously, transfusions, blood serum intrathecally.

Pneumococcal peritonitis: sulfapyridine immediately, then specific serum intravenously, no surgery.

Pneumococcal otitis media: begin sulfapyridine therapy to prevent mastoiditis.

Pneumococcal endocarditis: serum and sulfapyridine; feel fine while under treatment, although blood continues to be invaded; no cure once condition is established.

### CONCLUSION

The following conditions usually require the combined treatment of the two therapies, the specific serum and sulfapyridine:

1. If the patient is over 40 years old: M. R. 20-35% during first 2 years of life; M. R. 10% under 20 years; then increase 10% with each decade of life. (40% and ones after 40 years.)
2. If bacteremia is present: Need specific serum (anti-bodies) *now*.
3. If treatment is begun after 3 days of illness, bacteremia usually occurs around the fourth day.
4. If there is involvement of two or more lobes: M. R. of 8.5% for one lobe; M. R. of 24.5% for two lobes; M. R. of 40.7% for three lobes; M. R. of 68.2% for four lobes; 11 cases with all five lobes involved, 100% M. R. (Cohen and Lewis.)
5. If pneumonia is Type III: This type has highest M. R. (50%); has highest percentage of positive cultures (96.1%).
6. Complications, such as pregnancy, focal infections and cardiovascular disease: 150 cases treated with sulfapyridine, 15 deaths, M. R. 10%; 4 cases treated with serum and sulfapyridine, no deaths.

### III—EARLY DIAGNOSIS

An effort has been made to determine a method of diagnosing pneumonia by laboratory methods early, before the patient has all the signs and symptoms of an out and out pneumonia, and to eliminate some of those cases diagnosed as pneumonia that are not true pneumonia.

In looking over the charts, we have found in the past year that some of the cases certainly do not follow a typical pneumonia course, nor was the laboratory work consistent with the majority of the true pneumonia cases that were in this hospital. We do know that even though a patient has a specific type of pneumococcus in his sputum he does not necessarily have to have pneumonia. Some of these cases, although I cannot say they did *not* have pneumonia, certainly were not typical.

Finland, Spring, Lowell and Brown, in the May issue of *Annals of Internal Medicine*, state the following: "Certain types, notably Types I, II and V in adults and Type XIV, I and V in infants and children have been found to quite consistently bear etiologic relation to acute pulmonary infection. Other types, such as III, VII and VIII in adults and VI and XIX in infants, while etiologically related to many cases of acute pneumonia, have also been found frequently to be normal inhabitants of the nasal pharynx without relation to acute disease. Still others, as Types X and XX and types beyond XX, can usually be considered

as part of the normal pharyngeal flora, and only rarely give rise to acute pneumonia."

We do know that x-ray gives us proof when we are unable to determine definitely whether a patient has or hasn't true pneumonia. In this hospital in the past year, out of a total of 92 cases of lobar pneumonia, 43 had x-rays. Out of a total of 205 diagnosed broncho-pneumonia or atypical pneumonias, 76 had x-rays. However, x-rays are an added expense to the patient. As far as treatment is concerned, we very frequently consider the patient as having pneumonia, at least since sulfapyridine has come in, even if it is only a severe acute bronchitis; and he recovers promptly, so the end-result to the patient as far as diagnosis is concerned may not be an important factor. But when acute bronchitis is diagnosed as pneumonia, our pneumonia rate per year is markedly increased, and incorrect.

An effort has been made to try to evaluate the accuracy of the white count and non-filament count. A large majority of the pneumonias in this hospital in the past year has white counts varying between 15,000 and 65,000, with a high percentage of polymorphonuclear cells, and non-filament count as high as 60%. We know that probably the patient with a count like this has more than acute bronchitis, and in many of these cases x-rays show a rather wide distribution of pneumonia. Whether we can rely on this white count to dif-



ferentiate bronchitis from pneumonia is questionable. I have gone through some of the histories and picked out some with low white count, and have tried to evaluate the clinical course with the white count.

*Case 47262.* Age 21. This patient had had a cold for two weeks. The night he was admitted to the hospital he developed pain in his left chest. His temperature went up. He had some cough. His chest showed very few scattered rales in the right lower lobe. His temperature on admission was 102. This dropped to normal in 3 hours and remained normal. Sputum showed no pneumococci. White count was 13,000, with 77% polymorphonuclear cells. There is a question of whether we could call this true pneumonia. (Show x-rays.)

*Case 47295.* Age 50. This patient had had a cold for about one month. Three days before admission he developed a chill and cough, and pain in the upper part of his chest. Physical examination showed loud coarse rales throughout his chest, but loudest in the right apex. On admission his temperature was 99.6. In 4 hours it was normal and remained so. Sputum showed tubercle bacilli, and pneumococci Type VI. This patient's white count was 12,800, with 89% polymorphonuclear cells. No x-ray was taken. It is questionable whether this patient had true pneumonia. Possibly these pneumococci, Type VI, were not the causative organism. However, this patient was given sulfa-pyridine after admission, and we cannot say positively what would have developed.

*Case 46633.* Age 2 weeks. This was an Agricultural patient of mine. The baby had had a cold for two days. About 12 hours before admission it had developed dyspnoea and cyanosis. Physical examination revealed rales throughout both lungs. Throat culture showed pneumococci, but no type was determined. This child's temperature remained close to 101 rectal for 24 hours; then came down to normal, where it remained. No specific treatment was given. White count was 16,050, with only 44% polymorphonuclear cells. I believe I was wrong when I made a final diagnosis of bronch-pneumonia on this baby. If it had really had pneumonia it would not have recovered as rapidly as it did. I think this child had acute bronchitis.

*Case 46764.* Age 31. This was a patient of mine. Diagnosis of mild broncho-pneumonia was made. This patient had a chill 3 days before admission. On the night of admission her temperature had gone up. She had developed pain in her left chest. There had been no bloody sputum. Physical examination showed numerous rales in the left base. Her temperature on admission was 102. It dropped to normal in 8 hours and varied between normal and 100 for 2 days, then was normal. Sputum showed no type reaction to pneumococci. White count was 8,100, with 52% polymorphonuclear cells. On looking back again, I believe this patient did not have pneumonia.

*Case 46921.* Age 7 months. This child had had

an elevated temperature for 3 days. Two days before admission it had begun coughing. No examination of chest is recorded except the statement that the child had pneumonia. Temperature went up to 102.6 rectal shortly after admission; then dropped fairly rapidly to nearly normal, where it remained. Sputum was positive for Type X pneumococci. White count was 11,950, with 32% polymorphonuclear cells. One wonders if this child had had pneumonia. No specific treatment was given.

These five cases have had a white count below 16,000 and as low as 8,000, with polymorphonuclear cells count ranging from 89% to 32%. We might wonder without x-ray evidence if all of these were not acute bronchitis. However, we have some evidence to doubt that.

*Case 46495.* Age 12. This patient developed headache 4 days before admission and had felt drowsy, with elevated temperature. He had very little cough; no pain; no dyspnoea. Chest showed dullness, with rales in the lower right lung. Sputum showed no type reaction to pneumococci. However, shortly after admission this patient's temperature went up to 103.8. It ranged above 103 for about 36 hours, and then came down to normal. White count was 10,300, with 51% polymorphonuclear cells. This was a true pneumonia.

*Case 46573.* Age 21. This patient had an elevated temperature for 4 days. The morning of the day of admission he developed a severe cough and pain in his chest. Physical examination showed rales in the right base posteriorly and some dullness. On admission this patient's temperature was 104. It ranged between 104 and 105 for 4 days before coming down to normal. Sputum showed no type reaction to pneumococci, although pneumococci were found. On admission this patient's white count was 7,850, with 73% polymorphonuclear cells, and while in the hospital the highest count was 8,100, with 82% polymorphonuclear cells. This was certainly definite pneumonia with very little evidence of severe infection as shown by the white count although this count may have meant a low resistance, or influenza.

*Case 47291.* Age 13. This patient began feeling badly about one week before admission, and was running a very little fever. Had headache; no cough. Two days before admission he developed pain in his left chest. Physical examination showed a few scattered rales in the left base. On admission his temperature was normal. It remained nearly normal, going up to 100 twice in the next 2 days. Sputum typing showed Type XVIII pronounced. White count was 8,400, with 66% polymorphonuclear cells. We would doubt whether this patient had pneumonia if we were considering the clinical course and blood count, even though the sputum showed positive type reaction. However, x-ray was taken.

These cases seem to show that we cannot depend on the white count, and not always on physical findings and clinical course to determine defi-

nately that a patient has or has not pneumonia. On none of these cases was the non-filament count recorded. In going through some of the other records I noticed some counts below 10,000, with 25-30% non-filament, and x-rays showed positive pneumonia. I also noticed some cases with a count between 15,000 and 20,000 or higher, with a non-filament count of 5% to 7%, and x-rays showed definite pneumonia.

I doubt whether we can depend too much on any laboratory procedure aside from x-ray to differentiate acute bronchitis or acute influenza with bronchitis from a true pneumonia. From these few case findings we might conclude that to definitely determine whether a patient has or has not pneumonia by laboratory methods, x-rays are required.

15 E. Monroe.

## Management of Surgical Lesions of the Biliary Tract\*

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**T**HE more we analyze statistics from the large medical centers in this country and the more personal experience we have with diseases of the biliary tract, the more we are impressed with the fact that the good end-results from surgery are obtained only when early and sufficient surgery is performed.

The available information at hand plus a moderate personal experience shows that a high percentage of the population is suffering from a greater or lesser degree of disease of the biliary system. According to Eliason and North about 60% of the complaints made to the physician are referred to the gastro-intestinal tract. They believe that 30% of the people of the United States, after the age of 45 years, are suffering from biliary disease.

The clinical history and physical findings will lead one to make the correct diagnosis in a high percentage of the cases. The additional use of laboratory tests at hand; that is, x-ray, dye test, blood examination, and biliary drainage, will increase our diagnostic acumen to a high degree of efficiency.

### REASONS FOR SURGERY

Once a definite diagnosis of cholecystic disease is made, surgery should be advised. Medical men who keep these patients under observation and treatment for any appreciable length of time are, no doubt, in ignorance of the pathological processes taking place and the deleterious effect that will be brought about in the liver and pancreas if these processes are allowed to continue. The changes are irreparable and the cause of the poor surgical end-results. Early surgery would prevent chronic hepatitis and pancreatitis. The patient should obtain normal digestion if the chronic inflammation is stopped early in the disease. No surgeon should lead a patient who gives a long history of biliary disease to believe that surgery will cure his condition. These patients should always be warned or advised before operation that the progress of the disease will be stopped, but no promise should be made as to the amount of improvement to expect; only time will tell.

\*Read before the New Mexico State Medical Society, Gallup, New Mexico, May 11 to 13, 1939.

### EFFECTS ON LIVER AND PANCREAS

The liver and pancreas are the two most important organs which are affected by disease of the biliary tract. Because of their manifold physiologic activities, it is obvious that any disease which depresses or temporarily inhibits these properties will greatly affect the organism as a whole. From the time the patient comes under observation until he is dismissed from the hospital the hidden and often unappreciated activities of the liver and pancreas are probably more important in keeping the patient alive and make for a more successful outcome of the case than some of the other organs which are so closely observed by the physician; that is, the heart and kidneys.

The most important known functions of the liver have to do with metabolism. The liver is essential for the metabolism of each of the major foodstuffs. It keeps food in storage and has it constantly available for the use of the organism regardless of the rate the food reaches the body. Carbohydrates are stored in the form of glycogen, and glucose is manufactured from other substances. The liver regulates the amount of glucose in the blood, making a constant amount at all times for all the tissues, especially the muscles. Any under-activity in the amount of glucose available will result in hypoglycemia. Any over-stimulation of the liver may produce a hyperglycemia. The liver is probably always involved, directly or indirectly, in hyperglycemia or hypoglycemia.

According to Mann, the liver is a storehouse for proteins. It deaminizes the amino acids and forms urea. In the former process it manufactures glucose from protein and in the latter it transforms the waste portion of the amino acids into a substance readily excreted from the body. The liver is also a storehouse for fat. It will absorb and store as much as 40% of its weight in fat when the individual is on a diet rich in fat. The fat content of the liver will also increase after the administration of certain substances which injure the organ.

Hepatic activity is involved in the metabolism of some of the inorganic elements of the body, particularly minerals, which are excreted in the bile. The best known function of the liver is the



excretion of the bile. The excretion takes place constantly, but the rate varies. Ingestion of a meal will cause an increase in the amount of flow of bile.

The liver protects the organism from many injurious agents. It is only logical then that the liver should be kept in a healthy state as long as possible. A liver rich in glycogen is more resistant to most of the injurious agents than a liver poor in glycogen. No doubt many factors affect the rate of development as well as the character of a hepatic lesion. According to Mann, the diet is one of the most significant factors. Animals with a lesion of the liver will live much longer on a carbohydrate diet than those on a meat diet.

We know that repeated insults to the liver, whether they are infectious or chemical in nature, will eventually change the pattern of the hepatic lobule to one of cirrhosis. One can anticipate then what will happen to any liver which is constantly or repeatedly insulted by infection as occurs in chronic cholecystic disease. It is true that only a small amount of normal liver tissue is necessary to carry on all the functions of the liver. It may also be true that the chronic dyspeptic suffering from chronic cholecystic disease may live many years, but certainly he does not feel normal during any of that time.

#### ACUTE CHOLECYSTITIS

The management of acute cholecystitis, according to recent literature on the subject, is quite a debated question at the present time. The question of when to operate upon these patients is probably not such a serious matter as one would think from reading the literature. Our reaction would be that any well qualified surgeon with experience in the treatment of cholecystic disease would not have a set rule, but would operate at the "opportune time." The opportune time may be within a few hours of the initial attack in one case and may be deferred for a week or more in another. The age, general condition of the patient, presence or absence of diabetes, cardiac or renal disease, and other constitutional disorders will alter the decision as to the proper time to institute surgery. The proper advice of immediate surgery in a young, otherwise healthy person may be entirely the wrong advice in an aged patient with diabetes and cardiac disease. All patients should have a thorough evaluation of their general condition and their ability to withstand a major operation. Necessary preoperative treatment should be given. The operation of cholecystectomy should be done when possible to get thorough exposure and proper visualization of the ducts and cystic artery. Serious conditions of the aged patient suffering from cardiovascular renal disease and from complications such as jaundice, pancreatitis, or carcinoma, will argue against cholecystectomy in favor of cholecystostomy and a lower mortality rate. In dealing with these cases the surgeon must not only realize his own limitations, but also those of his patient.

Preoperative care and preparation should begin

as soon as a definite diagnosis of cholecystic disease has been made. In the acute case, in which the need for surgery is immediate, the patient is hospitalized, the general condition evaluated and glucose solution administered intravenously. Time will usually allow for a cleansing of the colon by enemas. Nothing but liquids should be given by mouth, supplemented by saline and glucose solutions intravenously for from 24 to 48 hours before operation. The usual abdominal preparation is made the night before, and a hypodermic injection of morphine and atropine is given one-half hour before the time set for the operation. In our small series of 179 cases this procedure was followed in only 6 acute cases.

In most cases the surgeon has plenty of time to do what he considers necessary to make the patient a good or better operative risk. If the patients are obese they are given a low caloric diet until the weight is reduced sufficiently. Hypothyroidism, if present, is corrected by the administration of thyroid extract. Observation and frequent checks on the basal metabolism are made over a period of from 3 to 6 weeks. Any associated diseases, such as diabetes or cardiovascular renal disease, are treated by someone qualified to do so, for as long as necessary to give the maximal improvement.

As soon as maximal improvement in the general condition has been made the patient is hospitalized, usually 3 or 4 days previous to the time set for the operation. During the preoperative stay in the hospital attention is paid to thorough cleansing of the bowel by repeated enemas. A non-residue diet with a high caloric value is given along with large quantities of fluids and sedatives sufficient to insure good rest. A liquid diet of a high caloric value is given for 24 hours, perhaps supplemented by 1500 cc. of a 5% solution of glucose in saline intravenously every 24 hours.

The jaundiced patient needs all of the foregoing care plus some special attention. If the jaundice is associated or complicated by an increased prothrombin time, one or more blood transfusions are given. A transfusion of from 200 to 300 cc. of blood is given the morning of the operation. The advantage of the preoperative use of preparations of vitamin K in the jaundiced patient will no doubt be of great help in the successful outcome of the most severe cases. We have not had enough experience in its use to make a definite statement as to its benefit. The recent literature is full of good reports and one should not hesitate to use it when the indication arises.

The anesthetic should be of the surgeon's choice. Spinal, splanchnic block, local infiltration, and rectal anesthesia are to be used by those who are proficient in their use. The qualifications for the proper anesthetic is one that will give good relaxation and not injure the hepatic cells. We have been in the habit of using cyclopropane because of the high concentration of oxygen; it must be administered by an expert in order to get the proper upper abdominal relaxation. After the operation

is over the patient is usually rational and can rid himself of mucous and vomitus should vomiting occur.

The technic of the different surgical procedures to meet the different pathologic conditions found is not pertinent to this paper. The essential points are to have good exposure so that all the structures are accurately visualized and so that sufficient surgery for that given case can be done. It is here that the judgment, experience and ability of the surgeon and the condition of the patient should dictate the type and extent of the operation. We always use some sort of drainage for a few days, in order to prevent biliary peritonitis. We lost one patient by neglecting to do so.

The postoperative care is usually that of any major surgical case, except that attention must again be paid to the giving of sufficient glucose solution intravenously to keep the liver in as good condition as possible. We usually give 1500 cc. of a 5% glucose in saline twice a day. Repeated blood transfusions are given if indicated. We frequently return the bile to the gastro-intestinal tract by giving it to the patient in grape juice. The administration of thyroid extract is carried on after the patient is able to retain it postoperatively. This we believe keeps the blood circulating more rapidly and therefore obviates the formation of thrombi in certain cases. All oral administrations of fluid are withheld for from 12 to 24 hours, or until nausea ceases. Gastric lavage or constant siphonage is used at the least provocation and as long as indicated. Saline proctoclysis is given routinely. Enough fluids should be given parenterally to cause an excretion of 1000 cc. or more of urine in 24 hours. Carbon dioxide is given every 30 minutes for the first 24 hours to encourage deep breathing. The patient is placed in the semi-Fowler position and moved from side to side frequently. The nurse is instructed to move and massage the patient's legs at least three times a day. Water and a liquid diet are given as soon as nausea ceases. Soft to full non-residue diet is given after the bowels have moved, or after the temperature approaches normal. The usual or average postoperative hospital stay is 12 days.

Good advice for the beginning or young surgeon is not to attempt surgery of the gallbladder or

ducts until he has become thoroughly equipped with knowledge of the anatomy, physiology and surgical pathology of the biliary tract, and then only after he has assisted in enough cases to be sure of himself.

In closing, I would like to make a plea for earlier diagnosis and earlier advice as to the proper treatment of surgical lesions of the biliary system. Only by early surgery will cures be obtained. Most of this responsibility is upon the internists' shoulders, as it is to them that patients go for advice.

During the past 15 years we have made a diagnosis of some surgical lesion in the biliary system in 588 cases and have given the proper advice in most cases, but have only had the opportunity to correct that condition in 179 cases. It is a significant fact that only approximately one-third of the patients accepted the advice given. It is from the observation of the 179 cases that we have come to the definite conclusion that early surgery offers the best chance for a cure. (Tables 1 to 4.)

1612 Tremont Place

TABLE 1—INCIDENCE

	Cases
Males	29
Females	150
Total	179
Youngest patient age years	13
Oldest patient age years	73
Average age years	40.8

TABLE 2—RESULTS

	Cases
Patients operated upon	179
Patients living	171
Patients dead	8
Operative mortality	
Per cent	4.4

TABLE 3—CAUSES OF DEATH

	Cases
Postoperative pneumonia	3
Bile leakage into abdomen	1
Obstruction of common duct—Carcinoma of head of pancreas	1
Hepatic insufficiency	1
Multiple pulmonary abscesses	1
Cardiac failure (?)	1
Cause not stated	1
Total	8

TABLE 4  
RESULTS FROM ONE TO FIFTEEN YEARS  
AFTER OPERATION\*

	Cases	Per cent
Questionnaires returned	81	
Results:		
No improvement	9	11.11
Slight improvement	13	16.04
Marked improvement	20	24.7
Normal digestion	39	48.14

\*Data obtained from questionnaires.

## Unusual Positions and Conditions of the Vermiform Appendix

DELBERT L. SECRIST, M.D.  
Tucson, Arizona

THIS paper is the direct result of a missed diagnosis. Recently a 30-year-old white male presented with a more or less typical history and the physical findings of an acute cholecystitis. Because of the facts—that the acute onset had been some 36 hours before we saw the patient, and that the patient was then much more comfortable—immediate operation, although advised, was not insisted upon. A word of warning, however, was given that should the discomfort become any more

severe, immediate operation should be done. The patient continued to improve for the next 48 hours, when very suddenly he was again seized with acute agonizing, shocking pain in the right upper quadrant, which pain radiated into the back. Immediate surgery was done, and, much to our surprise and chagrin, there was not an acute cholecystitis, *per se*, but, instead, a large, bulbous, acutely gangrenous appendix with a perforation the size of a nickel in the bulbous tip. This gangrenous, puro-



fibrinous mass was plastered to the base—not the tip—of the gall bladder and to the under surface of the liver. There was, needless to say, already a widespread, generalized peritonitis, and in spite of transfusions and other supportive measures the patient went on to expire some 3 days post-operatively. The patient had at no time showed any direct signs or symptoms to lead one to a diagnosis of appendicitis. So, since the appendix was found at operation to be in such an unusual position, a more or less extensive search was made into the literature regarding the uncommon positions and conditions of the vermiform appendix, and this paper is the result of that search.

#### EMBRYOLOGY

In intra-uterine life the gut, and consequently the appendix, is derived from the so-called middle-germ layer or entoderm, and first takes the form of a more or less straight tube which, for purposes of description, is divided into the fore, middle and hind guts. From the fore-gut, by differentiation and specialization, develops the liver, gall bladder, bile ducts, stomach, pancreas, oesophagus and the structures associated with the pharynx, namely, the thymus, thyroid, tongue and lungs. From the mid-gut arises the small intestines, and from the hind-gut the large intestines and bladder.<sup>9</sup> We are, of course, here concerned chiefly with the mid-gut. Jacobs<sup>10</sup> quotes Dr. Harold Cummings of the Department of Anatomy of Tulane University at New Orleans as saying, concerning the development of the gut, "In the human embryo entering the second month of development, the intestine is drawn toward the umbilical cord in the form of a simple U-shaped loop, the yolk stalk arising from its apex. The divisions of the intestinal loop are designated cranial and caudal limbs, in description of their relative positions at this period. The jejunum and a part of the ileum are represented in the cranial limb, while the remainder of the ileum and the entire colon arise from the caudal limb. There is, as yet, no generalized increase in the diameter of the segment which is destined to form the colon." The cecal process, or caecum, arises as a slight bud in the middle of the caudal limb during the fifth week.<sup>10</sup> It increases in length, and its end tapers so that in the eighth week it becomes a conical projection. The caecum then begins to widen, but its terminal portion remains narrow and becomes the appendix. During the third month the cecum, or wider proximal portion, expands so as to exceed the caliber of the neighboring colon. Later, fetal development is characterized by heightening of the size differences between the appendix and caecum, although it is not until after birth that an abrupt demarcation between the two is acquired. The caecum becomes sacculated from the accumulation of solid fecal matter within it, and thus the adult form of the caecum is attained. The three longitudinal bands, or taeniae, of the intestine meet at the base of the appendix, and are, at first, equally spaced around the caecum; however, the protruding sacculations separate the taenia to a variable

extent, and hence the caecum attains its asymmetrical form. Accompanying all these changes in form is a corresponding change in position. The original primary straight intestinal tube with its mesentery was just to the left of the mid-line.<sup>11</sup> Then as the large and small bowel start developing and elongating (the small much more rapidly than the large), the coils of the small bowel fall to the right side, while those of the large intestine remain on the left side.<sup>12</sup> During approximately the fourth month of gestation<sup>13</sup> the colon becomes rotated upon itself so that the large intestine is carried over the front of the small intestines. This causes the caecum, with its appendix, to leave its position in the left side of the abdomen, ascend, and with its mesenteric attachment acting as a sort of handle, rotates in the form of a partly open fan to land at the under surface of the liver at the fifth month. There, as the length of the colon increases, its course to the right is deflected downward by the liver, until, at about the sixth intra-uterine month, it reaches its normal position in the right iliac fossa, and becomes more or less adherent to the posterior abdominal wall.

#### ANOMALIES

Arrests of development in the differentiation of the caecum and appendix, or in the ascent, rotation and descent of these organs, may occur at any stage of the process, and the conformations which arise are correspondingly varied. Hence, we may find a normal appendix and caecum anywhere in the arc from the left side of the abdomen up around the epigastrium and under surface of the liver down over the front surface of the right kidney to the right iliac fossa, and if the mesenteric attachment be unusually long and mobile, even down into the pelvis. Or, on the other hand, all forms of abnormally developed appendices and caecums may be found at any point over the same route. There may be even a complete absence of either or both the appendix and caecum, although this anomaly is exceedingly rare. Bradley<sup>8</sup> found two cases of congenital absence of the appendix in 8,102 examinations in the autopsy or dissecting room. Heineck<sup>11</sup> in 3,550 autopsies at Cook County Hospital did not find a single case of agenesis of either the appendix or caecum. On the other hand, Dorland<sup>7</sup> reported 35 cases of absence of the appendix. J. B. Deaver<sup>6</sup> reported the only case of absence of both that I could find in the literature that I had available.

I think it is now obvious that in our case of suspected acute cholecystitis with which we started this paper, the process of rotation referred to in the last paragraph ceased at the fifth month of embryonic life, and the appendix remained in contact with the gall bladder and under surface of the liver, where it was found at surgery and which can readily explain the gall bladder symptoms.

Another uncommon anomaly which has to do with arrest in development during the rotation of the caecum and appendix is the so-called retro-peritoneal or extraperitoneal appendix. This comes

about by the developing mesentery and peritoneal coat failing to somewhat surround the migrating caecum and appendix, and as these start descending on the right side they usually become fixed to the posterior abdominal wall in the region of the right kidney and have the peritoneum merely spread over them rather than enveloping them. These are the cases which, when inflamed, not only resemble but actually may cause perinephritic abscesses. Strauss<sup>23</sup> reported five such cases of retroperitoneal appendices, one of which was removed through the incision into an extraperitoneal abscess in the perinephritic area. These, if farther descended, may also resemble a psoas abscess. Marbury<sup>17</sup> says these extraperitoneal or retrocolic appendices constitute about 7% of all cases.

Another position of the appendix which is given an anomalous classification but which is seen in 9% of cases is where the appendix is closely adherent to the posterior surface of the caecum, and is commonly spoken of as a retrocaecal appendix. Meyer and Spivak<sup>19</sup> call attention to this type of appendix and to its association with the so-called Lane's kink, or the attachment of the terminal part of the ileum to the brim of the pelvis.

Still another anomaly of the single appendix is the so-called giant or cystic appendix. This, of course, is not congenital, but is a degenerative process developing some time after birth. About 183 of such cases have been reported, the largest being about the size of an adult human head.

A number of cases of double colons, caecums and appendices are reported in the literature, but I will only discuss these very briefly. If anyone is especially interested in this phase, Greig, in the *Edinburgh Medical Journal* for April, 1934, in an article entitled, "Processus Vermiformis Puplex," presents a most complete summary of the literature on the subject. Some authors are very skeptical about there being such an anomaly as a double appendix, but there are certainly enough dependable surgeons who have reported such cases to vouch for their existence. All authorities, however, agree that certainly over 98%<sup>3</sup> of the reported cases of double appendix are the result of a previous acute inflammatory process to a single appendix which went on to necrosis and spontaneous division after fibrinous adhesions had been set up between the tip and the adjacent mesentery, colon, or ileum. Another duplication and one that perhaps is even more rare is the double lumen appendix. The earliest suggestion of this condition was by Rosenberger<sup>21</sup> in 1903, when he reported finding it at the post mortem of a carcinoma case. Prentiss<sup>20</sup> in 1907 presented a microscopic slide of an appendix having two distinct lumina. To illustrate this anomaly we have the good fortune of also being able to present to you a microscopic slide of a double-lumined appendix. This specimen was removed at operation at the County Hospital about two or three months ago from an early middle-aged white male, who had presented with a more or less typical history and

the physical findings of an acute appendicitis. Dr. Lindberg prepared the specimen and has kindly loaned us the slide to show to you.

Another similar anomaly is the two-limbed appendix described in 1924 by Elwyn.<sup>8</sup> Other duplications have been described, but I think, in their connection, it will suffice to quote the concluding line of Greig's<sup>10</sup> article to which we have already referred: "The vermiform processes may be altogether apart; they may have become separated after the most distal—that is, the earliest—part had formed, and with or without bifidity of the extremity they may have formed a double-barrelled organ which may or may not have a common communication with the caecum."

#### CLINICAL SIGNIFICANCE

Now, why so much ink about the unusual positions and anomalies of the appendix when they are so relatively rare? Because these conditions must be borne in mind by the operating surgeon and emphasized from time to time if the still much too high mortality rate of appendicitis is to be reduced. For instance, if on opening the abdomen of a suspected case of appendicitis a normal appendix presents itself, recalling the case of Schooler<sup>22</sup> may prevent one much later embarrassment. This author found free fluid in the abdomen and a normal looking appendix. However, further search revealed a smaller acutely inflamed and perforating appendix about 20 mm. below the normal one.

Of course, much more important than the anomalies is the bearing in mind of the unusual positions and the conflicting signs and symptoms they may present. Amory,<sup>1</sup> in an article on abnormal positions of the appendix and "The Direct Bearing on Appendiceal Mortality," classifies these unusual positions of the appendix in five groups:

1. Those due to anatomical displacement, in which he states those appendices having a long mesentery enjoy a wide range of latitude and are liable to infection because of the predisposition to irritation. When the caecum is mobile the appendix may be found any place in the abdomen, and consequently may simulate any intra- as well as extra-peritoneal conditions. Perhaps the most common mistake in this connection is the diagnosis of acute salpingitis when there is really a true pelvic appendicitis.<sup>4</sup> Cases have been reported of the appendix being the sole contents of an inguinal hernia.

2. Those due to pathological displacements, where, because of previous inflammation with resultant adhesions, the appendix is pulled to a new bed. This condition is seen most often in pelvic inflammatory disease, in acute upper abdominal conditions, acute nephritic pathology, etc.

3. Those cases displaced by pressure from pregnant uteri, tumors, etc.

4. Congenital malpositions, which, in addition to those of which we have already spoken, would also include those cases of true situs transversus of transposition,<sup>12</sup> together with those cases which Blake<sup>2</sup> describes as causing functional disturbances



of the intestine. In these latter cases, either because of a short, poorly developed meso-appendix or because during foetal descent of the caecum the appendix became fixed to the posterior abdominal wall and with continued growth and descent of the caecum there is a more or less buckling of the colon and caecum, causing some obstruction and constant tugging on the fixed appendix, and hence simulating appendicitis without any true inflammation.

5. Those cases associated with other inflammatory processes and temporarily overshadowed by them, as illustrated by the frequent clearing up of gall bladder, ulcer, or other upper abdominal symptoms by the removal of a diseased appendix.

With regard to these unusual positions and conditions, what are some of the things that will help us in our diagnosis, and help us to avert some of the pitfalls which so often occur? A number of authors have taken the cardinal symptoms of appendicitis and listed them relative to their frequency in these unusual cases. These are approximately as follows:

1. Pain—100%.
2. Local tenderness—89%.
3. Leukocytosis—79% to 95%.
4. Increased polymorphonuclear cells—90%.
6. Elevated temperature—68% to 84%.
6. Elevated pulse—44% to 84%.
7. Rigidity—40% to 65%.
8. Nausea—35% to 65%.
9. Increased tension—25% to 43%.

Then, besides these so-called cardinal symptoms, the symptoms relative to the organ against which the appendix may be plastered must also be kept in mind. Hoaglund,<sup>13</sup> in a review of 150 cases of ruptured appendix, says that appendicitis is still responsible for 25,000 deaths annually. The mortality rate is so high because of cases which go on to rupture before operation, and he states that in his series of 150 cases, "the variations in position demonstrate that the anatomical placement of the appendix in out-of-the-way locations is largely responsible for the lack of recognition of appendicitis within a sufficient period of time to allow for the removal of the organ before its rupture." Hence, if one is to avoid perforation in these variably placed acute appendices and thus aid in the reduction of the existing mortality rate, early operation seems to be the only choice of procedure. Or, as Hoaglund<sup>13</sup> says, "The dictum follows in case of questionable acute appendicitis: Operate."

In conclusion, let me reiterate and re-emphasize the fact that although appendicitis is the most frequent problem we have to deal with in surgery, and that although appendectomy can be at times one of the easiest of surgical procedures, nevertheless, mainly because of frequent unusual positions and conditions of the appendix, producing various atypical pictures, it is not, and never will be, a simple problem; and because of the missed diagnoses, with resultant increase in the mortality rate from perforation, it behooves everyone doing general surgery to acquaint himself with, and to fre-

quently review himself on, the abnormal conditions and locations of the vermiform appendix.

## SUMMARY

1. The embryological development of the vermiform appendix and the caecum is briefly presented.
2. A case is presented illustrating arrest in the rotation of the caecum and appendix on the under surface of the liver—at about the fifth intra-uterine month—with later acute inflammation resembling gall bladder disease.
3. Various abnormal positions and conditions of the appendix are mentioned, with short discussions about several of these cases.
4. Relative frequency of cardinal signs and symptoms are presented with the idea of evaluating their presence as an aid in the diagnosis of these atypical cases.
5. Inability to correctly locate the position of the appendix is presented as being responsible for the the still high mortality rate of appendicitis, whether operated or not,<sup>18</sup> and a plea is made for early operation, especially in the questionable cases.

123 So. Stone Avenue

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## The Management of Diabetes

PHILIP CORR, M.D.  
*Riverside, Calif.*

PERHAPS the best way to discuss the management of diabetes is to follow the steps taken in handling an average case of diabetes mellitus.

An old recipe for making rabbit pie starts out with the admonition to "first catch your rabbit." In this instance we must first get our case of diabetes by being sure of our diagnosis. This is particularly important because of the practicality of the dictum, "once a diabetic always a diabetic."

### DIAGNOSIS

Usually the diagnosis of diabetes mellitus is first suggested by the finding of sugar in the urine. Unless this is associated with cardinal signs of diabetes such as weight loss in spite of heavy eating, excessive urination with marked thirst, and persistent, marked glycosuria, possibly with signs of acidosis, the diagnosis should not be made without finding a high fasting blood sugar of at least 120 mg. per cc. In case of doubt the question may rarely need to be settled by a glucose tolerance test. Glycosuria alone is not sufficient cause for calling a patient a diabetic. Renal diabetes, physiologic glycosuria such as from fright, reduction of the copper sulphate solutions by ingested materials such as aspirin, are common enough to be a real source of confusion. One not infrequently finds people on diabetic diets for years where it is probable that diabetes never existed.

It is most important to be sure of this first step in the management of diabetes, *i. e.*, making sure of the diagnosis.

The next step is to determine the severity of the diabetes. Is our patient in a state of acidosis requiring immediate, most careful management or can his case be handled less strictly? If there is acidosis as evidenced by the presence of considerable diacetic acid the patient should be treated as a case of impending coma. Gerhardt's ferric chloride test for diacetic acid should be utilized whenever a moderate or large amount of sugar is found in the urine. The matter of treatment of coma will be considered later. For the present we shall assume an uncomplicated case of moderate to mild severity. This is by far the most common type encountered.

With this average diabetic before us we explain to him the advisability of following the rules we are about to suggest, informing him briefly of the nature of diabetes as well as its course, assuring him that his understanding and co-operation will pay him large dividends. They are invariably advised to get and study some handbook on diabetes to supplement the office discussion.

### DIET

Next one outlines the diet. With or without insulin no diabetic can afford to be uninformed about

this basic part of the treatment of his diabetes. Generally speaking, the important thing to emphasize is that the patient should eat approximately the same type and quantity of food day after day until he learns to substitute other foods later. Instead of following some set diet it has been my custom to insist on the patients taking certain basic foods or adequate substitutes and then adding what they wish, avoiding the foods rich in carbohydrates. For instance, they should eat daily one good serving of lean meat, one or two eggs, two or three glasses of milk, three fresh or water-packed fruits, and a selection of vegetables as desired, usually avoiding or limiting potatoes and other vegetables above the 10% carbohydrate class. Substitutes can be given for each of these important food if desired. One slice of bread of any kind is usually allowed with each meal. Butter, mayonnaise and bacon are used to help increase calories. In general, alcoholic and soft drinks are avoided, but tea, coffee and clear or vegetable soups are allowed.

This is a fairly satisfactory and easy diet to prescribe or to follow. It aims to provide adequate protein, a moderate amount of carbohydrate and sufficient minerals and vitamins. Greater care can be exercised in reducing the carbohydrate content by more careful consideration of the fruits, vegetables and bread intake, where such care will allow a patient to get along without insulin. Usually the mild cases can get along without insulin with the above-mentioned diet or the moderately severe diabetics will require insulin in spite of a more stringent diet. Caloric requirement can be adjusted by fat intake. One aims to keep diabetics a trifle underweight.

### URINALYSES

The important step following the handling of the diet is to teach the patient to examine his own urine and bring in a written record for the doctor to observe his progress. Apart from hospitalization of the patient there is no other way to satisfactorily control the patient's diabetes. He must be taught some simple test such as Benedict's qualitative test. It is important that he be provided with proper solutions and be properly instructed about testing for sugar in the urine. For economy's sake 2.5 cc. of Benedict's solution with 4 drops of urine can be used instead of the usually prescribed 5 cc. with 8 drops of urine. The tube should be scratched with a file mark to prevent too much guessing. After 5 minutes of a water beaker or 1 minute boiling over the flame, the tube should be shaken and the color reaction recorded as blue, green, yellow, red, etc.

The tests should be made four times daily; before breakfast and about 3 hours after each meal until the diabetes is well under control. Then one test daily with the four tests being done once a



# ❖ ❖ PROGRAM ❖ ❖

## Forty-Ninth Annual Meeting ARIZONA STATE MEDICAL ASSOCIATION

TUCSON  
APRIL 17, 18, 19, 20, 1940  
Santa Rita Hotel

### OFFICIAL CALL

The Arizona State Medical Association will convene in Annual Session at Tucson on April 17, 18, 19, 20, 1940. The provisions of the Constitution and By-laws and the Official Program will govern the deliberations.

CHAS. S. SMITH, M. D.,  
President, Nogales.

### INVITATION

Tucson and Pima County Medical Society extend a cordial invitation to the Arizona State Medical Association and its entire membership to attend the Forty-ninth Annual Convention of the State Association. The Committee on Arrangements is sparing no effort to make the coming session memorable for its educational value and its enjoyable entertainment.

HAROLD W. KOHL, M. D.,  
President, Tucson.  
ALVIN KIRMSE, M. D.,  
Secretary, Tucson.

### AUXILIARY

The Ladies' Auxiliary joins in this cordial invitation, and will present a program of luncheons, speakers, style show, and teas for the visiting ladies.

MRS. V. G. PRESSON,  
State President.

MRS. ALVIN KIRMSE  
President Pima Auxiliary Society.

### REGISTRATION AND ASSEMBLY

#### Arizona State Medical Association

Registration headquarters will be the SANTA RITA HOTEL. The registration fee is \$5.00, which entitles one to luncheons, supper and banquet.

All papers or addresses read before the Association, except those of invited guests, shall be confined to twenty minutes. Opening discussions are limited to five

minutes, and general discussions to three minutes each. A discussant shall speak but once on the same subject.

Papers read before the scientific sessions shall become the exclusive property of the Association and shall be deposited with the secretary for publication in the official organ of the Association (Southwestern Medicine).

Social entertainment and program details are found elsewhere in this program.

### HEADQUARTERS—SANTA RITA HOTEL

### MEETING PLACES

REGISTRATION .....	Santa Rita Hotel
Council .....	Santa Rita Hotel
House of Delegates.....	Santa Rita Hotel
Scientific Sessions.....	Santa Rita Hotel
Luncheons, Banquet.....	Santa Rita Hotel
Buffet Supper.....	Santa Rita Hotel

Be sure to Register on Arrival

### OFFICERS

President:	
Chas. S. Smith.....	Nogales
President-Elect:	
D. F. Harbridge.....	Phoenix
Vice-President:	
Dan L. Mahoney.....	Tucson
Secretary:	
L. R. Kober.....	Phoenix
Treasurer:	
C. E. Yount.....	Prescott
Speaker of House:	
J. D. Hamer.....	Phoenix
Councilors:	
Geo. O. Bassett.....	Prescott
W. Paul Holbrook.....	Tucson
Geo. C. Truman.....	Mesa

### COMMITTEES

#### Committee on Scientific Assembly:

D. F. Harbridge, Chairman.....	Phoenix
Charles S. Kibler.....	Tucson
Frank J. Milloy.....	Phoenix
Wm. L. Minear.....	Patagonia
Dan L. Mahoney.....	Tucson

#### General Committee on Arrangements:

Pima County Medical Society.....	Host
H. W. Kohl.....	Tucson
Dake Biddle.....	Tucson
W. Paul Holbrook.....	Tucson
Alvin Kirmse.....	Tucson
Dan L. Mahoney.....	Tucson
J. B. Littlefield.....	Tucson
W. G. Shultz.....	Tucson
C. A. Thomas.....	Tucson

## Entertainment

J. B. Littlefield.....	Tucson
V. G. Presson.....	Tucson
R. W. Rudolph.....	Tucson
H. C. James.....	Tucson

## Commercial Exhibits

Alvin Kirmse.....	Tucson
William D. Carrell.....	Tucson

## Scientific Exhibits:

A. L. Lindberg.....	Tucson
E. M. Hayden.....	Tucson

## Golf

W. G. Shultz.....	Tucson
Clyde Flood.....	Tucson
R. E. Hastings.....	Tucson

## Press

Harold W. Kohl .....	Tucson
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## COUNCIL AND HOUSE OF DELEGATES

### SCHEDULE OF MEETINGS

#### Council Meeting

Wednesday, April 17, 10:30 A. M.  
Santa Rita Hotel

#### Members of Council

Chas. S. Smith, President.....	Nogales
D. F. Harbridge, President-Elect.....	Phoenix
Dan L. Mahoney, Vice-President.....	Tucson
Leslie R. Kober, Secretary.....	Phoenix
C. E. Yount, Treasurer.....	Prescott
J. D. Hamer, Speaker of House and Delegate to A M A .....	Phoenix
Hal W. Rice, Councilor-at-Large.....	Bisbee
C. R. Swackhamer, Councilor-at-Large.....	Superior
John E. Bacon, Chairman Medical Defense.....	Miami
Geo. O. Bassett, Councilor, Northern District.....	Prescott
W. Paul Holbrook, Councilor, Southern District.....	Tucson
Geo. C. Truman, Councilor, Central District.....	Mesa

#### Apportionment of Delegates

Business Session.....Wednesday, April 17, 1:30 P. M.

#### Membership

Apache County .....	1
Cochise County .....	2
Coconino County .....	1
Gila County .....	2
Graham County .....	1
Greenlee County .....	1
Maricopa County .....	15
Mohave County .....	1
Navajo County .....	1
Pima-Pinal County .....	10
Santa Cruz County .....	1
Yavapai County .....	2
Yuma County .....	2

Total..... 40

## GUEST SPEAKERS

EDWARD L. DORSETT, M.D.\*.....St. Louis, Missouri  
Assistant Professor, Obstetrics and Gynecology,  
St. Louis University College of Medicine.

CHAS. A. DUKES, M. D.....Oakland, California  
President, California Medical Association.  
Trustee, National Physicians' Committee for  
Extension of Medical Services.

THOMAS J. HARRIS, M. D.....New York City, N. Y.  
Director, American Board Otolaryngology.

J. SHELTON HORSLEY, M. D.....Richmond, Virginia  
American Surgical Association.

SAMUEL D. INGHAM, M. D.....Los Angeles, California  
Department of Neurology and Psychiatry, Uni-  
versity of Southern California Medical School.

HANS LISSER, M. D.....San Francisco, California  
Clinical Professor of Medicine, University of  
California Medical School. Chief of Endocrine  
and Metabolic Division, Franklin Hospital, San  
Francisco.

CHAS. F. MCKHANN, M. D.\*.....Boston, Massachusetts  
Associate Professor of Pediatrics and Com-  
municable Diseases, Harvard University Medi-  
cal School.

WILLIAM S. MIDDLETON, M. D.....Madison, Wisconsin  
Professor of Medicine, University of Wiscon-  
sin Medical School. Secretary, American Board  
of Internal Medicine.

MAURICE L. TANTER, M. D.....San Francisco, Calif.  
Instructor in Pharmacology, Stanford Medical  
School.

\*Appears on the program through the courtesy of the  
Maternal and Child Health Division of the State Department  
of Health. Also note EXTENSION LECTURES.

## PROGRAM

### First Day

THURSDAY FORENOON, APRIL 18  
9:30 A. M.

#### OPENING EXERCISES

Call to Order.

CHAS. S. SMITH, M. D., President

Invocation.

REVEREND GEORGE FERGUSON

Address of Welcome.

HAROLD W. KOHL, M. D.  
President Pima County Medical Society, Tucson

Response.

F. W. BUTLER, M. D., Safford  
President Graham County Medical Society

Induction of President-Elect.

CHAS. S. SMITH, M. D., President, Nogales

President's Address.

D. F. HARBRIDGE, M. D., Phoenix



**SCIENTIFIC****10:30 A. M.****"Forty Years of Industrial Surgery"**

JOHN E. BACON, M. D., Miami, Arizona

**"Masquerades of Bronchiogenic Carcinoma"**

WILLIAM S. MIDDLETON, M. D., Madison, Wisconsin

**"Some Clinical Experiences with Newer Sex Hormones"**

HANS LISSER, M. D., San Francisco, California

**Memorial Services****10 Minutes****Musical Selections\***

Remarks.....C. A. Thomas, M. D., Tucson

Prayer.....Reverend Father Don Hughes

**Musical Selections**

Taps.....American Legion

\*Musical selections will be under the direction of Professor Rollin Pease of the Department of Music, University of Arizona.

**ROUND TABLE LUNCHEONS****12:30 Noon**ENDOCRINOLOGY—Dr. R. Davison, Tucson, Presiding  
"Masculinizing Syndromes"

HANS LISSER, M. D., San Francisco, California

MEDICINE—Dr. W. Paul Holbrook, Tucson, Presiding  
"Differentiation of Blood Dyscrasias"

WILLIAM S. MIDDLETON, M. D., Madison, Wisconsin

NOSE AND THROAT—Dr. C. E. Patterson, Tucson, Presiding

"Treatment of Acute Sinusitis"

THOMAS J. HARRIS, M. D., New York City, N. Y.

OBSTETRICS AND GYNECOLOGY—Dr. Wm. D. Carrell, Tucson, Presiding

"Management of the Third Stage of Labor"

E. L. DORSETT, M. D., St. Louis, Missouri

PEDIATRICS—Dr. Hilda Kroeger, Tucson, Presiding  
"Poliomyelitis, Encephalitis, and Meningitis"

CHAS. F. McKHANN, Boston, Massachusetts

SURGERY—Dr. C. A. Thomas, Tucson, Presiding  
"Differential Diagnosis and Treatment of Gall-bladder Disease"

J. SHELTON HORSLEY, M. D., Richmond, Virginia

**THURSDAY AFTERNOON****SCIENTIFIC****2:30 P. M.**

"The Clinical Value of the New Benzedrine and Ephedrine-like Drugs.

MAURICE L. TAINTER, M. D., San Francisco, California

"Cancer of the Stomach and Small Intestine"

J. SHELTON HORSLEY, M. D., Richmond, Virginia

"Progress in the Control of Communicable Disease"

CHAS. F. McKHANN, Boston, Massachusetts

**EVENING ENTERTAINMENT**

Buffet Supper—4:30 to 7:00 P. M.....Santa Rita Hotel

**8:00 P. M.**

Public Address.....High School Auditorium

"Voluntary Budgeting for Medical and Hospital Needs and the Dangers of Compulsory Insurance Politically Controlled."

CHARLES A. DUKES, M. D., President of the California Medical Association

*Second Day***FRIDAY FORENOON, APRIL 19****SCIENTIFIC****9:30 A. M.**

"A Practical Procedure in the Treatment of Fistulas of the Small Intestine"

H. G. WILLIAMS, M. D., Phoenix, Arizona

"Protection of the Circulation in Surgery"

WILLIAM S. MIDDLETON, M. D., Madison, Wisconsin

"Cancer of the Colon"

J. SHELTON HORSLEY, M. D., Richmond, Virginia

**ROUND TABLE LUNCHEONS****12:30 Noon**

ENDOCRINOLOGY—Dr. Harold W. Kohl, Tucson, Presiding

"Precocity Syndromes"

HANS LISSER, M. D., San Francisco, California

MEDICINE—Dr. Nelson C. Bledsoe, Tucson, Presiding

"Treatment of Cardiac Failure"

WILLIAM S. MIDDLETON, M. D., Madison, Wisconsin

NEUROLOGY AND PSYCHIATRY—Dr. John Donahue, Tucson, Presiding

"Some Considerations of Psychotherapy"

SAMUEL D. INGHAM, M. D., Los Angeles, California

NOSE AND THROAT—Dr. J. S. Mikell, Tucson, Presiding  
"Treatment of Chronic Sinusitis"

THOMAS J. HARRIS, M. D., New York City, N. Y.

OBSTETRICS AND GYNECOLOGY—Dr. R. K. Smith, Tucson, Presiding

"Contracted Pelvis"

E. L. DORSETT, M. D., St. Louis, Missouri

PEDIATRICS—Dr. B. P. Storts, Tucson, Presiding

"The Study of Acid-base Balance"

CHAS. F. McKHANN, M. D., Boston, Massachusetts

SURGERY—Dr. Meade Clyne, Tucson, Presiding  
"Diagnosis and Treatment of Perforative Appendicitis"

J. SHELTON HORSLEY, Richmond, Virginia

**FRIDAY AFTERNOON****SCIENTIFIC****2:30 P. M.**

"Bronchial Obstruction"

THOMAS H. BATE, M. D., Phoenix, Arizona

"Childhood and Adult Hypothyroidism and Myxedema, and the Proper Use of Thyroid Substance."

HANS LISSER, M. D., San Francisco, California

"Toxemias of Pregnancy"

E. L. DORSETT, M. D., St. Louis, Missouri

"Newer Aspects of Organized Medicine"

CHARLES A. DUKES, M. D., President

**EVENING ENTERTAINMENT****7:00 — 9:00 P. M.**

Cocktail Party.....Santa Rita Hotel

**9:00 P. M. — 1:00 A. M.**

Banquet and Dance.....Santa Rita Hotel

# Third Day

SATURDAY MORNING, APRIL 20

## SCIENTIFIC

9:30 A. M.

"Acute Gastro-Intestinal Disturbances"  
CHAS. F. McKHANN, M. D., Boston, Massachusetts

"The Relationship of Neurology to Other Departments  
of Medical Practice."  
SAMUEL D. INGHAM, M. D., Los Angeles, California

"The Use of Newer Gynecological Hormones"  
E. L. DORSETT, M. D., St. Louis

"Acute Abdominal Emergencies"  
E. PAYNE PALMER, M. D., Phoenix, Arizona

SATURDAY AFTERNOON—1:00 P. M.

Golf ..... El Rio Country Club  
Medal Play Handicap Tournament  
President's Trophy

## AUXILIARY PROGRAM

THURSDAY, APRIL 18

Registration.....Santa Rita Hotel

10:00 - 12:00—General Session

1:00 P. M.

Luncheon and Style Show.....Pioneer Hotel

4:00 - 5:00 P. M.

Tea .....Veterans' Hospital  
Buffet Supper.....To Be Announced

8:15 P. M.

Open Meeting.....High School Auditorium

FRIDAY, APRIL 19

10:00 A. M. - 12:00 A. M.—General Session

1:00 P. M.

Luncheon.....El Conquistador Hotel

7:00 P. M.

Cocktail Party.....Santa Rita Hotel

9:00 P. M.

Banquet and Dance.....Santa Rita Hotel

Note: Dr. Edward Lee Dorsett, Obstetrician and Gynecologist of St. Louis University School of Medicine, and Dr. Chas. F. McKhann, Instructor in Communicable Diseases, of the Harvard Medical School, will address the General Sessions on Thursday and Friday mornings respectively at 11 o'clock. The General Sessions in full will appear in the program at the time of the Meeting.

## COMMITTEES

General Chairman—Mrs. D. L. Secrist

### Registration and Credentials

Mrs. C. A. Thomas  
Mrs. R. K. Smith  
Mrs. H. D. Cogswell

Mrs. S. H. Watson  
Mrs. W. D. Carrell  
Mrs. Meade Cline

### Hospitality

Mrs. C. E. Patterson  
Mrs. E. M. Hayden  
Mrs. S. H. James

Mrs. J. B. Littlefield  
Mrs. Royal Rudolph  
Mrs. Alvin Kirmse

### Finance

Mrs. E. M. Hayden

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Mrs. Donald Lewis  
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Mrs. A. L. Lindberg

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### Publicity

Mrs. R. A. Wilson

Mrs. L. H. Howard

## Decorations

Mrs. W. Paul Holbrook  
Mrs. V. A. Smelker

Mrs. Joy Omer

## Favors

Mrs. Royal Rudolph  
Mrs. John Mikell

Mrs. J. B. Van Horn

## Entertainment

General Chairman—Mrs. Harold Kohl  
Mrs. Clyde Flood  
Mrs. Roy Hewitt

Mrs. B. P. Storts

## EXTENSION LECTURES

Note: Immediately following the Annual Meeting a series of Extension Lectures in Pediatrics, Gynecology and Obstetrics will be conducted under the auspices of the Maternal and Child Health Division of the State Department of Health in cooperation with the Association Committee on Maternal and Child Health, the expense being borne by the M. C. H. Division of the State Department of Health. The Association Committee urges the membership to attend these courses scheduled as follows:

### DOUGLAS

Geo. H. Hess, M. D., Chairman

APRIL 22—8:00 P. M.

1. "The Management of the Complications of Labor"  
E. L. DORSETT, M. D., St. Louis
2. "Obscure Fevers in Infancy and Childhood"  
CHAS. F. McKHANN, M. D., Boston

### MESA

Melvin L. Kent, M. D., Chairman

APRIL 23—8:00 P. M.

1. "Indications for Operative Intervention in Labor"  
E. L. DORSETT, M. D., St. Louis
2. "Acute Gastro-intestinal Disturbances"  
CHAS. F. McKHANN, M. D., Boston

### YUMA

A. I. Podolsky M. D., Chairman

APRIL 24—7:00 P. M.—Dinner

1. "Indications and Choice of Procedure for Terminating Pregnancy at all Stages of Gestation."  
E. L. DORSETT, M. D., St. Louis
2. "Pneumonia in Infancy and Childhood"  
CHAS. F. McKHANN, M. D., Boston

## ENTERTAINMENT FEATURES

THURSDAY—4:30 - 7:00 P. M.

BUFFET SUPPER—Santa Rita Hotel

FRIDAY—7:00 - 9:00 P. M.

COCKTAIL PARTY—Santa Rita Hotel

9:00 P. M.—1:00 A. M.

BANQUET AND DANCE—Santa Rita Hotel

SATURDAY AFTERNOON—1:00 P. M.

### GOLF TOURNAMENT

SATURDAY AFTERNOON, April 20 at 1:00 P. M., there will be a Golf Tournament at the El Rio Golf and Country Club.

### Special

This year the Association President, Dr. Chas. S. Smith, is giving a beautiful trophy to be played for on a handicap basis each year until it is won three times by any one doctor, at which time it will become his permanent possession.

For those who may not know it, we want to say that in 1938 at Tucson, each and every doctor who entered the Tournament won a prize, and we expect to have a large number of prizes for this Tournament. So be sure to bring your clubs and plan to play on Saturday afternoon.



week will usually suffice. Whenever a new food is tried or when changes in insulin dosage are made or whenever illness, shock or injury is present four tests daily should be recorded. With this record it is easy to advise the patient about the handling of his case. Without adequate records the doctor can hardly advise the patient intelligently. The four tests can be done at one time during the day from specimens saved for the purpose.

The following is an example of the type of record to be kept.

	7 a.m. Ins.	10 a.m. Ins.	3 p.m. Ins.	9 p.m. Ins.	Remarks
5/4/39	Red 0	Red 0	Red 0	Red 0	
5/5/39	Yellow 0	Red 0	Red 0	Yellow 0	
5/6/39	Yellow 0	Yellow 0	Yellow 0	Yellow 0	
5/7/39	Green 0	Yellow 0	Green 0	Green 0	
5/8/39	Blue 0	Green 0	Blue 0	Blue 0	
5/9/39					

Generally, if the urine is kept sugar free the great majority of the time the patient's diabetes is for all practical purposes controlled. If the glycosuria is not controlled diacetic acid tests and blood sugar levels help to estimate the situation more correctly. When the urine reports are not available blood sugar reports become increasingly valuable. In the juvenile types of diabetes one tries to keep the blood sugar level approximately normal. In the older group one tries to keep the blood sugar level below 150 mg. of glucose per 100 cc. of blood. But practically speaking, with co-operation with urinalyses, blood sugar levels are unimportant. Just what, if any, harm a high blood sugar without glycosuria does is not definitely known.

#### INSULIN

After watching our patient along for a week or so and noting progress in signs and symptoms we may discover that we cannot control his diabetes satisfactorily on diet alone. Insulin is advised. Generally one uses protamine zinc insulin because it is a long lasting insulin requiring only one injection a day. This is usually given before breakfast, starting with 10 units of U 40 daily if the diet has nearly but not satisfactorily controlled the diabetes. If the urine test is not normal within a few days one increases the insulin dosage by perhaps two units daily until the glycosuria is controlled. If the glycosuria is controlled consistently for a few days one reduces the dose of the protamine zinc insulin to a point where one occasionally has some slight reduction of the Benedicts solution. In this way one avoids hypoglycemic reactions, which, while less common with protamine zinc insulin, are more severe.

With the chart of the urinalysis results one can tell where if any place that the patient is "spilling over," and reduce the food intake for the preceding meal, *e. g.*, if the 3:00 p.m. specimen always shows marked reduction of the copper sulphate solution the carbohydrate intake for the noon dose should be reduced and added to some other meal or eaten at night.

Such "juggling" will usually control the situation. Occasionally it is necessary to give supplementary old or regular insulin at appropriate times

in the more difficult cases. It must be remembered that the old insulin has its maximum effect from 2 to 4 hours after administration, while protamine zinc insulin has its maximum activity from 12 to 24 hours after administration. In fact, its action is so prolonged it has a cumulative effect like that of digitalis, which means that a given daily dose of this long lasting insulin has its maximum cumulative effect several days or a week after it is given.

Hypoglycemic reactions from protamine zinc insulin occur usually in the early morning and consist mainly in drowsiness, or headaches, or numbness and tingling of the fingers and mouth, or nausea or vomiting. Rarely paralysis and coma develop. Hypoglycemic reactions from the unmodified, old, or regular insulin occur usually within a few hours after injection of the insulin and consist in trembling, weakness, sweating, mental confusion, drowsiness and in severe cases convulsions and coma. The treatment for both is providing adequate amounts of sugar, recalling that the sugar intake in the case of protamine zinc insulin cases will have to be repeated over a period of several hours as the excessive dose of insulin is still being absorbed.

An injection of 0.5 cc. of adrenalin will often hasten recovery by liberating glycogen from the liver. Most hypoglycemic reactions are recovered from spontaneously.

#### REACTIONS

Coma must be differentiated from a hypoglycemic reaction. Without glycosuria and diacetic acid in the urine there is no coma. The matter is serious enough so that estimations of blood sugar and carbon dioxide combining power of the blood should be utilized where possible. Diabetic coma is a major medical emergency. It means usually that someone has blundered. The treatment depends chiefly on the degree of acidosis. With acidosis evidenced by a positive diacetic acid test plus glycosuria insulin therapy is required. With severe acidosis and impending coma absolute bed rest is insisted upon and a minimal dose of at least 50 units of the old insulin, supplemented with an injection of 50 units of protamine zinc insulin is given. Fluids are forced by whatever route necessary to get in 3000 to 4000 cc. in 24 hours, as these patients are always dehydrated. The patient is kept warm. A warm enema is usually given. Urinalyses are made every 2 hours, catheterizing the patient if necessary. Ten to 25 units of unmodified insulin are given every 2 hours, depending on the amount of glycosuria and diacetic acid present. As the patient improves the intervals for testing the urine are lengthened and the insulin dosage decreased accordingly. At least 100 grams of sugar are given in divided doses during the first and subsequent 24-hour periods in the form of orange juice or gingerale or intravenous glucose. Soft diet is substituted when the patient can eat, and soon he is returned to his regular diet. After a coma the patient should be kept in bed for a week or two.

## SURGERY

If a diabetic requires surgery it is to his advantage, if the operation is an elective one, to have his diabetes well controlled before surgery. If it is an emergency his diabetes can be controlled by frequent urinalyses as described above, with a glucose intake of at least 100 grams daily in divided doses covered by the required amounts of insulin. It is preferable not to use ether, as it depletes the glycogen content of the liver and increases the blood sugar level. It should be remembered that acidosis may simulate an acute appendix with abdominal pain, nausea and vomiting and leucocytosis. In any even, it is well to control acidosis in a patent about to have surgery, in order to allow for a more normal risk.

Diabetics who become ill and cannot eat should follow a liquid diet of orange juice and milk so that their carbohydrate intake is assured. They should be particularly careful about having their urinalyses made during these periods so that the insulin intake can be adjusted accordingly.

The pregnant mother is handled in the same way as a normal person. The new-born infant is generally hypoglycemic, and in addition to giving it injections of glucose for the first few days a short birth should be provided so that glucose therapy will not be delayed.

The elderly diabetic patient should be instructed in the care of the feet. Uncontrolled diabetics develop arteriosclerosis prematurely. Generally the feet are relatively insensitive and with a poor blood supply. Healing of injuries or infections in these extremities is difficult and often a serious matter. Gangrene of the foot is one of the commonest complications of diabetes due to the arteriosclerotic factor. Peripheral neuritis is not uncommon and may be largely due to vitamin B deficiency.

## SUMMARY

The important points in the handling of a proven case of diabetes are:

1. To have some standard adequate diet to which the patient adheres.
2. To have a simple record of the content of sugar in the urine.
3. The glycosuria should be controlled by carefully adjusting the dosage of one type of insulin or another when necessary. This adjustment is particularly essential in periods of illness and shock. It is most important to recognize acidosis and coma, and treat the case vigorously.
4. The care of the feet is especially important in elderly diabetics as foot trouble is a major complication.

3616 Main St.

## Rehabilitation of Congenital Spastic Paralysis (*Little's Disease*)

WILFRED C. CURPHEY, M. D.  
*Las Vegas, N. Mex.*

CONGENITAL spastic paralysis or cerebral birth injuries may be defined in the words of Pusitz as essentially an upper motor neuron lesion due to disease or injury affecting the cerebral motor centers; as a result, there is a loss of cerebral inhibition. In other words, there is no true paralysis of the muscle, but a lack of control of muscle power and complete loss of timing in muscle function or co-ordination, resulting in a spastic, tense inability to move the extremities. An exact definition of the term "birth injury" would strictly imply only an obstetrical injury, but the late results of many types of disturbances to the child during the last month of pregnancy and during the first two or three weeks of life are, in many instances, identical with actual obstetrical damage.

Phelps classified the types of paralysis under five headings:

- 1—True Spasticity
- 2—Athetosis
- 3—Overflow or Synkinaesia
- 4—Incoordination or Ataxia
- 5—Tremor

True spasticity itself represents a hyperirritability of muscle to any stimulus; for instance, tapping on the patellar tendon produces a markedly increased contraction of the quadriceps; in fact, any stimulus will likewise produce this contraction. Sudden noises cause sudden response, or any

local disturbance of the muscle such as rubbing, striking or stretching is also a distinct stimulus to contraction. This is particularly seen in attempts at passive motion, resulting in a definite resistance on the part of the muscle to pull. In this way the typical disturbance in the spastic individual is explained.

Athetosis consists of an involuntary, more or less constant contraction of successive muscles without regard to function in antagonistic or reciprocal groups. This disturbance results from damage to the basal nuclei, which will be discussed in pathology later. Many times slow motion pictures are needed to distinguish the athetoid group from simple forms of incoordination.

Overflowing or synkinaesia is merely involuntary motion resulting from voluntary attempts at motion. This is seen normally many times in individuals attempting intricate motions associated protrusion of the tongue or movements of the face. In spastic individuals the overflow or dyskinaesia becomes very severe, and intensive facial overflow often causes the patient to appear feeble-minded because of grimaces on attempts to walk or use the arms.

Incoordination or ataxia must be distinguished from athetosis and overflow, and results from a variety of causes such as loss of muscle sense, loss of the sense of equilibrium, loss of sense of posi-



tion, and sometimes interference with muscle balance of peripheral nerve or muscle origin.

Tremors may be described as either fine or coarse, and are both intentional and non-intentional. There is very seldom any confusion regarding this disturbance except in cases of very coarse intention tremor where the condition suggests an incoordination. It can be distinguished, however, by its rhythmical and recurrent nature.

In classifying this group of patients according to the pathology existing, they may be listed under three heads, namely: (1) Developmental, in which there is not only lack of development of the cortical regions, but perhaps of the brain as a whole, since these cases do not have good intelligence. These individuals are not worth while training since there is nothing that can be trained. It is very difficult to distinguish these cases from others during the first two or three years of life since many of the actions of an infant are purely automatic, as will be pointed out later. (2) If pure type reactions only are considered, the other two fall into the classification of cortical involvement or basal ganglion involvement; the cortical type results in typical spasticity, and the type which has as its basic pathology injury to the basal nuclei results in athetosis, tremor and incoordination. It is important to distinguish these two groups since the true spastic type has a very excellent prognosis and the pure athetosis type has a very poor prognosis. (3) In addition to these, the post-encephalitic syndrome may also be considered as a cause of spastic paralysis. In these there may be a preponderance of spasticity or athetosis; usually, however, there is a combination of both.

#### INCIDENCE

Regarding the incidence of spasticity, it has been pointed out that there are probably 40 or 50 spastics in every 100,000 of the population, and, unlike infantile paralysis, the spastic disease is unfortunately distributed throughout the population without a great deal of respect for class or location. There has never been any true estimate of spasticity in any community in this country.

The prevalent opinion is that these cases are not frequent. As a matter of fact, it is the opinion of Pusitz that the figures in some instances even exceed those for infantile paralysis, but in all instances the figures are not far behind those of infantile paralysis. This is true in spite of the fact that many cases of spastic paralysis are never investigated, while those of infantile paralysis are. The probable reason for the lack of appreciation of these high figures for the incidence of spastic paralysis is due to the fact that the patient is kept in the background more than any other orthopedic case. The social worker feels that these cases are for the neurosurgeon or the mental institution; crippled children commissions are not so anxious to accept these cases because of the lack of uniform thought not only among the medical profession as a whole but even among orthopedic surgeons; also there is the fact that these cases are labelled as idiots. In other words, the medical

profession has been influenced by the first description of spastic paralysis of Dr. Little in 1861, and has respected his statement regarding this disease, which he calls spastic palsy with mental deficiency; as a result, the rich send these children to special schools, the poor allow them to go to institutions for the feeble-minded. If one includes them, in addition to cerebral birth injuries, hemiplegias, etc., in adults and also cases of encephalitis one has a much larger field for rehabilitation than ever in infantile paralysis. Of course, this immediately raises the question regarding what rehabilitation may be accomplished. It has been estimated that 70% are trainable; in other words, improvable; 7 or 8% can be benefitted by surgery, and 20% can be rehabilitated to a normal place in the world; none, of course, are completely curable.

#### MENTAL ABILITY

Regarding the mentality of spastic cases, the importance of the correct psychological approach cannot be overestimated. It can be definitely assumed that less than 25% of spastic individuals are mentally deficient. It has also been pointed out by Pusitz and Phelps that in the light of our present knowledge of psychiatry we are unable to apply the usual accepted methods of examination for mental deficiency. This is true because the spastic many times is completely unable to communicate, is completely unable to control his actions, and is therefore very difficult to really observe what his mental function is. It has become apparent in recent years, in the experience of those who have definitely attempted to treat such cases that after a prolonged period of observation and effort, very few are found to be truly idiots. Mills reports that in treating 200 or more severe forms that he could classify only five as being idiots. Pusitz estimates that fully 25 to 50% come up to average intelligence, 5 to 10% are abnormally bright since they have to develop their faculties to a much higher degree in order to meet competition, and about 10% or less are idiots or morons. Considering the cross-section of the population it will be seen that this is the usual run of intelligence quotia in all people. However, there is the true spastic personality to deal with. This is not because of low intelligence, but is due to the environment of individual patients. Many are not given a proper chance to express themselves. From the very beginning they suddenly come to the realization that they are individuals distinct and different from the rest. Such a condition often arises because of the spastic's inability to communicate; therefore, the parents and other members of the family, believing that he is feeble-minded, never include him in conversation or other activities of the family, usually treating him as one completely lacking in personality. As a result of this, the spastic becomes either resentful or he is stimulated to make abnormal although futile efforts to take his rightful place in the family circle. In addition to this, there is a tendency on the part of a great many of them to excuse ab-

normal actions or wrongdoings, if they are capable of accomplishing such acts, onto the results of their infirmities. If we consider then that we have a large group of such individuals, probably as many or more than the number of infantile paralysis cases, it seems to be worth while to make some effort to rehabilitate them. Obviously when one observes the spastic both as one with physical defects as well as with mental maladjustment, the treatment of such cases must therefore involve their entire spastic personality. For many years the orthopedic surgeon has been satisfied to correct gross deformities and complete failure. For this reason it has been found that the treatment of spastic disease involves the problem of teaching and muscle training; in other words, physiotherapy, the first principle of which is to first teach the spastic the necessary physiological functions, since many of these individuals are unable to sleep, unable to eat and are unable to control either the bladder or the bowels; in other words, many spastic children are completely helpless and are the most extensive type of burden on their families.

#### TREATMENT

Regarding the method of procedure to be adopted in the treatment of such cases, first it is necessary to hospitalize the patient for thorough examination and the evaluation of the various deformities which may have developed as a result of improper muscle balance. It is important to remember that the all-important method of treatment is physiotherapy, which consists of muscle training, teaching the patient various methods of controlling the muscle function as well as teaching what equilibrium is and how to adjust himself to the difficulties of maintaining normal equilibrium. In any event, the first principle of treatment is based on the actual difficulty found in the examination. In the spastic the hyperirritability of muscles, resulting in almost simultaneous contraction of antagonists, is the important factor. Thus, voluntary relaxation is one of the first aims. In the athetoid, voluntary relaxation is desirable in order to produce volitional motions later, uncomplicated by athetoid movements. In pure incoordination, the principle of relaxation is less important, as is the case with tremors. The ability to relax is important to normal individuals; it relieves tension, mental and physical, and is essential in skilled activities. In the birth-injured, its importance is very great, and it can be taught successfully if cooperation can be obtained. In babies and youngsters, relaxation is more normal and is taught to be maintained in the face of more and more disturbing factors. In older people, of course, it can be taught more directly. This part of the treatment should precede all other forms and should last until relaxation can be instituted at will and maintained for a long time. Aids to relaxation, such as sedatives, warm baths, etc., should be used with caution as there is a great danger of making the patient dependent upon these aids and being unable to relax without them. In patients who cannot stand, sit or bal-

ance, and who have difficulty in holding up the head, general training must be started on the neck and trunk. The work on the extremities, most of which is done lying down, can be done simultaneously with the strengthening of the neck and trunk.

Treatment on the extremities should always begin with the proximal joints. A highly trained hand or foot is of no use if there is dyskinesia in the shoulder or hip. The work is therefore started in these joints and extended gradually to the more distal parts. Often a year or more is needed in the hip and shoulder alone and at the end of this time very little improvement will be actually apparent. This must be stressed in the treatment, especially to the relatives, since the length of treatment is, of course, great, 5 years usually being the minimum.

In spasticity the previous training in relaxation is basic; then, while in as complete relaxation as possible, reciprocal motion may be attempted. These motions should be of very small amplitude and carried out very slowly in order not to disturb relaxation or produce reflex spasm. The motions should at all times be balanced in amplitude, speed and rhythm. Finally, active reciprocal motion may be begun by the patient himself, when it has been demonstrated that it can be done without spasms. Gradually the amplitude of motion can be increased and gradually the speed increased.

In athetosis the essentials are somewhat different. Here the athetoid movements underlie essentially normal reciprocation. If the athetosis is pure, the training in reciprocation can proceed more rapidly, but the preliminary training in relaxation will be found to take a much longer time. The amplitude of the motions can be increased more rapidly than in the spastic and the rhythm must be very regular.

In incoordination of the pure type the training in reciprocation resembles the training for any skilled activity. In overflow or synkinesia the work is again different. Here the passive reciprocal motion will be easy, as the overflow only results from attempt at active motion. The treatment, therefore, will emphasize the stage of active assisted motion and this phase will be the longest. Here the amplitude and speed must be extremely slow, as any attempt to hurry will produce a recurrence of the difficulty.

In tremors there is very little to be accomplished when they are of the non-intention type, but in the intention tremor reciprocal exercise is often very effective. It should be emphasized here that these conditions represent static lesions, progressive ones having been eliminated, and that the attempts at controlling intention tremor are thus more successful.

The conditions described seldom occur in pure form, but one or another predominates in a given case. The reciprocal motion must be given according to the indications of all of the conditions found in the individual under treatment. Thus an athetoid patient with overflow will necessitate



taking both of these conditions into consideration. Any element of spasticity seen in any otherwise athetoid patient must also be given special attention according to the principles of the treatment of spasticity.

Regarding the indications for surgery, such procedures should never be considered immediate. A period of training is often productive of surprising results, making certain operative procedures unnecessary. In any case, the procedures should be used only as incidents in and aids to the training program. Tenotomies are usually unnecessary, as the results are irreparable; however, they can occasionally be used to reduce total power where one of a group is tenotomized. For example, the adductor longus, when tenotomized alone, leaves the pectineus, adductor brevis and adductor magnus to perform the motion. Better balance may be obtained in this way. Tendon lengthening is not usually necessary or advisable, as the muscle will sooner or later contract and produce the same deformity; however, it cannot be said that it should not be used. Tendon or muscle stripping operations are used essentially to give better contractile leverage.

Novocain injections of nerve trunks are used occasionally to determine the effect of throwing them temporarily out of function. There may be doubt about the advisability of alcohol injections or Stoffel operations. A preliminary novocain injection of the nerves may be of great help in this determination. Alcohol injections will throw a

muscle out of function for a period of months by the paralysis of its motor nerves. This may be desirable in order to facilitate a period of training, so that when power returns to the paralyzed group a balance may be effected. Stoffel operations are valuable aids to the treatment. These procedures cannot be expected to effect a cure, but in carefully selected cases will enable a balance of power to be brought about which results in a greater ease of training. The most common nerves used in this procedure are the branches of the obturator and the internal or external popliteal. Tendon transplantations may very occasionally help in improving balance. It may be seen, therefore, that the treatment described is not easy and that it covers a long period of time. It requires the careful study of the individual from all standpoints, mental, physical and social. All cases which are accepted for treatment require very constant care. The treatment must constitute a regular part of the daily routine and the average length of time is one hour a day; the rest of the day the condition should be forgotten. Great pains can be made only if these patients are institutionalized.

In summary we can say that there is a large group of people crippled because of cerebral birth injury or congenital spastic paralysis, that about 70% of these individuals can be improved, 20% of which can probably be completely rehabilitated. The period of treatment is of necessity very prolonged and it is becoming more and more apparent that it is worth while.

## Mastoid Infections

W. E. VANDEVERE, M. D.

and

M. P. SPEARMAN, M. D.

*El Paso, Texas*

**M**ASTOID infections are practically always secondary to infections of the middle ear, which in turn are secondary to upper respiratory infections.

Children, because of the presence of tonsils and adenoids, are predisposed to middle ear abscesses and thus to mastoiditis. Scarlet fever before the advent of sulfanilamide frequently resulted in an infection of the mastoid antrum or bone.

Whether in a child or adult when we have an acute rhinitis we should use one of the ephedrin preparations to promote ventilation and drainage of the sinuses and middle ear. When there is a pharyngitis or involvement of the middle ears we use sulfanilamide routinely, regardless of the type of infection present. This line of treatment has markedly decreased the number of operations for acute mastoiditis.

If in spite of treatments or if the patient is not seen until there is a middle ear infection, we have found the use of auralgin drops quite effective.

However, if pain persists, and there is bulging of the ear drum a free tympanotomy should be done, without delay, so as to relieve pain, reduce temperature, decrease danger of mastoid infection and promote more rapid healing of the ear drum than if it ruptured due to necrosis.

In adults and very young children we use local anesthesia in doing a tympanotomy, while with the others we use ethyl chloride as a general anesthetic.

### TYPES OF MASTOIDITIS

Mastoid infections are divided broadly into the acute and chronic types and each requires a different method of treatment.

We shall first discuss the acute infection, and cardinal symptoms of which are pain and tenderness on pressure over the mastoid bone, and swelling and sagging of the posterior superior canal wall. Less to be relied upon is fever, discharge, and x-ray pictures.

There may be no fever, the discharge may be profuse or suddenly cease entirely and an x-ray

(Continued on page 102)

# SOUTHWESTERN MEDICINE

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New Mexico Medical Society  
Southwestern Medical Association  
El Paso County (Texas) Medical Society

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## CANCER CONTROL

Undoubtedly public education has helped the physician tremendously in his battle to control cancer. Lay organizations, supported by widely gathered funds, are doing a splendid piece of work in the mission field of spreading knowledge. The American Society for The Control of Cancer has this to say:

"Second only to heart trouble as a killer and most feared of all causes of death, cancer is in its early stages one of the most curable of serious diseases. Its definite diagnosis requires the services of a highly trained pathologist, but early symptoms which may mean the disease is present are easily recognized by any alert individual. Once cancer is diagnosed the preferred treatment is by a group of specialists and yet the key man in the whole picture of cancer control is the general practitioner to whom patients come for periodic examinations or for advice about apparently harmless conditions. While late cancer causes considerable suffering, in the early stages it is nearly always painless.

It is fitting that this paradoxical disease should be fought by an Army, not chiefly of men but of women, an Army not of destruction but of education, and its war should be a war to save life. Four years ago a small group of physicians, research workers, and club women launched the Women's Field Army of the American Society for the Control of Cancer. Its goal was to reduce cancer mor-

tality and to arouse the interest of men and women everywhere in this disease and the methods and facilities available in their communities for treating and controlling it. Between one-third and one-half of those who now die could and should be saved by early diagnosis and prompt treatment, declared the American Society for the Control of Cancer.

The growth of the Women's Field Army has been rapid. Divisions are now underway in forty-six states, Cancer information centers—local units of the Army—have been established in more than half the counties of the country. Cancer control is receiving more attention than ever before.

A beginning has been made, but only a beginning in this peacetime war. Approximately 150,000 men, women and children were destroyed by cancer in 1939. The needs in the field are great: more clinics, more funds for research, more facilities for indigent patients, above all, more education for the general public.

Working under the supervision of physicians and other experts, women are the leaders and organizers of the fight against cancer. However, the most paradoxical thing about this complex disease is that we cannot leave its control to leaders, to research workers, or medical men. We must all do our bit.

The Field Army suggests three measures that each one may adopt and so play a part in cancer control:

1. Have a comprehensive physical examination once a year, however well one feels. Women over thirty-five years of age should have what the American Society calls the B. P. Examination, covering the Breast and Pelvic areas, semi-annually.

2. Memorize the cancer danger signals, early and usually painless symptoms that may mean the disease is present and should always mean a visit to a physician. They are: any persistent lump or thickening, particularly in the breast; any irregular bleeding or discharge from any body opening; any persistent and unexplained indigestion; any sore that does not heal normally, especially about the tongue, mouth or lips; any sudden change in the form or rate of growth of a mole or wart.

3. Enlist in the Women's Field Army in April, set aside by Special Act of Congress as Cancer Control Month, and so help the Army carry on its work of education to save lives."

## ARIZONA ANNUAL SESSION

Elsewhere in this issue will be found the program of the annual session of the Arizona State Medical Association to be held in Tucson, April 18, 19, 20. Headquarters will be the Santa Rita Hotel, host to the 1938 session.

A number of nationally known guest teachers are to appear. Among them are:



1. Edward Lee Dorsett, M. D., Assistant Professor of Obstetrics and Gynecology, St. Louis University School of Medicine, St. Louis, Mo.

2. Thomas J. Harris, M. D., American Board of Otolaryngology, New York City, New York.

3. John Shelton Horsley, M. D., Surgery, Richmond, Virginia.

4. S. D. Ingham, M. D., Neurology and Psychiatry, Los Angeles, California.

5. Hans Lisser, M. D., Clinical Professor of Medicine, University of California, San Francisco, California.

6. Chas. F. McKhann, M. D., Assistant Professor of Pediatrics and Communicable Diseases, Harvard Medical School, Boston, Mass.

7. Wm. S. Middleton, M. D., Dean and Professor of Medicine, University of Wisconsin Medical School, Madison, Wis.

Several Arizona physicians will present papers to the society. Some of the in-state talent:

1. John E. Bacon, M. D., Miami, Arizona.

2. Thomas H. Bate, M. D., Phoenix, Arizona.

3. E. Payne Palmer, M. D., Phoenix, Arizona.

4. H. G. Williams, M. D., Phoenix, Arizona.

The Program Committee, headed by Dr. D. F. Harbridge, chairman, thus offers the membership one of the best-balanced agenda ever presented the Arizona Association. The quality and the quantity of the teaching at the annual sessions are showing remarkable advances from year to year. Attendance at these meetings affords one the chance to acquire new knowledge almost painlessly.

As usual, certain entertainment features are planned for the hours after study. There is to be a banquet, public meeting. Each day round table luncheons will be held. The visiting members of the Auxiliary are to be entertained in various ways, so that the physician's wife who needs a vacation may surely find surcease during the 3 days of the session.

The annual business meeting of the House of Delegates will take up during this session. Dr. Chas. Smith of Nogales, president of the Association, will be succeeded by Dr. O. F. Harbridge of Phoenix, president-elect.

Any physician who fails to attend this year's session is due to experience a distinct loss. For a very small sum, and 3 days of his time, the practitioner is herein offered a valuable short post-graduate course. It will be costly to miss it.

### THE "THROW-AWAY" PROBLEM

For a long time editors of the state medical journals, in company with the editors of the approved journals of national circulation, have concerned themselves with the problem of the "throw-away" publication. What merit these numerous desk-clutterers possess stems from their practice of lifting and abstracting original articles from the legitimate medical press. In the guise of scientific

journals they often wax fat and prosperous from their scavenging habit of publishing dubious advertising that has been refused by legitimate journals, thus giving birth and continued life in print to some of the worst fakes and quackeries now known to exist in the dark alleys of medicine. Much study of this disease of medical journalism has not yet brought to light an adequate remedy. In continuance of the search the editor of the JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY has this to say in the March issue:

"One of the annoyances of legitimate medical publications is the 'throw-away' digests, the editors of which cull over the various state and national journals and print condensations of some of their articles as a means to attract all types of advertising.

While our material is copyrighted still this is not a sufficient protection against rewording and printing the articles. This JOURNAL is offering a plan to the other journals, which have been the victims of this practice and if successful, we will devote a few pages every month to condensed prominent articles from other state and national journals. This is in line with the policy of THE JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY to provide an instructive readable magazine of practical value. Suggestions from any reader of ways to improve the JOURNAL along these lines will be gratefully received."

It is gratifying to note that SOUTHWESTERN MEDICINE has for the past 2 years been well aware of the value of a department of abstracts. In 1938 this journal abstracted and published 44 articles and editorials from other state journals. Because this Miscellany feature proved to be highly popular with our readers, the editorial staff abstracted, published 94 such condensations in 1939. Thus SOUTHWESTERN MEDICINE has amply demonstrated the increasing value of such a plan to its readers.

### MEDICAL REFUGEES

Increasing interest is attached to the problem of the emigre physician in America. Following the rise of Hitler to power, large numbers of middle European physicians fled to this country. Many of these men had attained eminence in their home land. Many were Jews, and that fact seems to be the basis of much angry argument today over the problem of what to do with them in their newly adopted land.

We have been led to infer that too many physicians are being graduated in our country today, yet, sponsored by the same source there now appear strong appeals to admit large numbers of foreigners to practice in America.

The entire question needs to be studied apart from the consideration of religious affiliations of the persons involved. Some states have sincerely attempted to do so, yet their conclusions and resulting laws are made the target for the age-old cry of anti-Semitism! No good can come to the American public, America's physicians or the emigres from loud, angry prejudice or false charges broadcast like the storied arrow; you'll recall that "it fell to earth—I know not where."

*Special Section*  
**Arizona State Medical Association**

PRESTON T. BROWN, M. D., *Associate Editor*  
 403 Professional Bldg., Phoenix, Arizona

### NECROLOGY

WILLIAM O. SWECK, M. D.

After a year of failing health, which forced his retirement from active practice last June, Dr. William O. Sweck, prominent physician and surgeon of Phoenix, Arizona, passed away at his home on March 3, 1940.

Dr. Sweck maintained numerous medical and surgical affiliations including membership in the local county and state medical associations, the American Medical Association, the American College of Surgeons, the Southwestern Medical Association, and the Pacific Association of Railroad Surgeons. He was also a member of the Medical Editors and Authors Association as he prepared many papers treating with his studies and research especially in the field of gall bladder treatment and surgery in which he was especially interested.

Dr. Sweck, during his full and active career, civic as well as professional, served a term on the Board of Regents for the Arizona State University, and was Secretary of the State Board of Medical Examiners for several terms. He was a 32nd Degree Mason and held various other affiliations with that Order. He served over-seas with the United States Army Medical Corps and was prominently identified with Legion work, having served as Commander of the Frank Luke, Jr. Legion Post, now the Luke-Greenway Post.

Missouri born, Dr. Sweck was graduated in medicine from the St. Louis University School of Medicine in 1912. He had practiced in Phoenix for 24 years, being co-director with William C. Grunow of the Lois Grunow Memorial Clinic since 1931. Dr. Sweck also served as assistant surgeon of the United States Public Health Service, but devoted his time since the founding of the Grunow Clinic to the work of that noted institution.

Surviving are his wife and one daughter, in addition to one brother and two sisters. A host of friends and associates mourn the passing of this eminent physician and surgeon, his services on March 6th being attended by those from all walks of life, many having come from distant points to pay their final respects and tribute.

### CONFERENCE OF PRESIDENTS AND SECRETARIES

A Conference of the Presidents and Secretaries of the component county societies was held, at the call of Dr. Chas. S. Smith, President of the Arizona State Medical Association, at Phoenix on

March 17th. Representatives of all societies were present except from two counties.

At the conclusion of the Conference of Presidents and Secretaries, it was voted to hold such a conference annually during the month of February, with Phoenix as the meeting point. A permanent organization will be worked out at the next session to give this group a business aspect for certain important activities not allocated to other branches of the Association.

Preceding the Conference, a Dutch Treat Scientific Dinner was held on Saturday evening, March 16th, the Maricopa County Medical Society acting as host for the Dinner, and the Committee on Scientific Education and Postgraduate Activities presenting the scientific program. Dr. E. R. Charvox, President of Maricopa Society, presided at the dinner, with Dr. F. W. Butler, Chairman of the Committee on Scientific Education, presiding over the scientific program. Two papers were presented:

Prostatectomy by Transurethral Resection—

Dr. W. G. Shultz, Tucson

Coccidioides Infection of the Lung—

Dr. O. J. Farness, Tucson

A floor show was presented as an entertainment feature.

## ARIZONA STATE MEDICAL ASSOCIATION

Tucson  
 April 18-19-20



## NEW MEXICO MEDICAL SOCIETY

Albuquerque  
 May 27-28-29



## *The President's Page*

ON other pages of this issue you will find the Scientific Program for the forthcoming Annual Meeting of our Association. I wish to call your attention to the array of outstanding speakers scheduled to address this Meeting, and to urge a full attendance from our membership. The guest speakers have been invited to address the General Sessions for two consecutive days, which will make it possible for each of you to hear these men on several important subjects, hence you are urged to make every possible effort to attend the three days of addresses.

Arizona, as we all know, is remote from the medical seats and centers of learning. For this reason the Committee on Scientific Assembly have brought in men noted in their various fields of practice and arranged round-table and discussion periods of sufficient length to give postgraduate aspects to the addresses presented. You have only to look at the list of the speakers and their subjects to see what a feast is in store for those who will attend.

Of interest is the public meeting to be addressed by Dr. Charles A. Dukes, President of the California State Medical Association, and prominently identified nationally with the work of organized medicine. Dr. Dukes will present the various important aspects of organized medicine to clarify presentations that appear in the press. Our membership should turn out enmasse for Dr. Dukes' public address as he is an outstanding speaker and will have a message of real importance for the profession as well as for the public.

By recommendation of the Conference of Presidents and Secretaries and vote of the Council, the business meetings of the Council and the House will be held the day prior to the Annual Meeting in order to leave the three days of scientific procedures uninterrupted by business sessions. This adds to the postgraduate features of the Meeting.

### REMEMBER:

The Annual Meeting, April 18, 19, 20, 1940  
Tucson, Arizona

A handwritten signature in cursive script that reads "Chas. S. Smith M.D.".

CHAS. S. SMITH, M. D., President.

## MASTOID INFECTIONS

(Continued from page 97)

picture will always show a cloudiness in every middle ear infection; and may indicate nothing more than a congestion of the mucous membrane lining the mastoid cells.

Not to be forgotten is the so-called silent mastoid infection, generally caused by the streptococcus mucosus, in which there are no symptoms referable to the ear or mastoid. This condition is found by an exploratory operation after all other possible causes of fever or diarrhoea in an infant have been investigated.

### TREATMENT

When we have a definite mastoid infection we should not be in great haste to operate, because many cases will get well if adequate drainage is maintained and sulfanilamide or sulfapyradine therapy established. Unless the symptoms are urgent we like to wait at least two weeks before operating so as to allow the process to become walled off and a certain amount of tissue immunity established.

For the acute mastoid infection a simple mastoid operation is always done. This consists of removing the cortex of the mastoid bone, cleaning out the necrotic bone, locating the additus to the middle ear and placing a drainage tube in same. The wound is closed with the exception of the lower end through which the drainage tube is placed.

A simple mastoid operation is easily done in an adult under local anaesthesia and this method should be used if for any reason a general anesthetic is contra indicated.

Some of the more serious complications of acute mastoiditis are lateral sinus thrombosis and meningitis. Within the last few months we have had one of each and fortunately both got well. The case of streptococcic meningitis was reoperated and the dura exposed for drainage, daily spinal fluid taps were made and sulfanilamide administered. Before the advent of sulfanilamide none of these cases recovered but now many such cases are reported. Our case of lateral sinus thrombosis recovered after resection of the internal jugular vein and opening the lateral sinus.

When we have a discharging ear of long standing, and especially if the discharge remains foul after careful local treatment, we can be fairly certain that we have necrosis of the mastoid bone, and a radical or modified radical operation should be done. Perhaps the term "complete mastoid" operation would be a better term.

When, in a chronically discharging ear, we see a perforation in the posterior-superior quadrant of the tympanic membrane, it is generally an indication to operate, because it is through this type of perforation that the epidermis grows and piles itself layer on layer into the mastoid space. This ball of epidermis is called a cholesteatoma and pressure necrosis dissolves away the adjacent bone

until often the brain is exposed over a wide area.

In a chronic mastoid infection the onset of severe headache, nausea, vomiting, vertigo, nystagmus or a Bell's palsy, demand immediate operation unless such symptoms can be proved to be due to some other cause. Operation in case of chronic mastoid infection is done with two objects in view: first of all to prevent serious intracranial complications and second to stop the discharge from the ear.

The radical mastoid operation is done exactly as the simple operation except that the posterior bony canal wall is removed and the posterior membranous canal is split in such a manner that it can be laid back into the mastoid cavity and held in place with gauze packing. The ear drum, if any remains from the disease process, is removed in this operation as well as the hammer and anvil and thus the middle ear and mastoid space is in wide open communication with the canal and can easily drain or be treated through this approach.

In children or individuals where most of the drum remains intact, we often save these structures by doing a modified radical operation. In this operation the posterior bony canal wall is lowered to the drum and the mastoid cavity is made to communicate with the external auditory canal anterior to the drum. In a carefully performed radical mastoid operation we can expect cessation of discharge in 75% of cases and removal of danger of intracranial complications in 100% of cases.

Mastoid operations both simple and radical are not as dangerous or difficult as generally believed to be. In checking over our operations during the past 15 years we find a mortality of less than 3%.

1001 First National Bank Bldg.

## COMMUNICATIONS

Sir:

The American Public Health Association has recently adopted a Report on the Educational Qualifications of Health Officers. The Report is distributed free in the belief that it will serve a useful purpose in raising the educational standards of professional public health personnel. Copies may be secured from the American Public Health Association, 50 West 50th Street, New York, N. Y.

Your cooperation will be greatly appreciated.

Very sincerely yours,

Reginald M. Atwater, M. D.

Executive Secretary.

February 7, 1940.

Sir:

A Pan-American Congress of Ophthalmology will be held in the city of Cleveland Ohio, on October 11 and 12, 1940. All ophthalmologists of the West-



ern Hemisphere are invited to attend. Until such time as the Pan-American Congress can elect its own officers, the American Academy of Ophthalmology and Otolaryngology has volunteered to undertake arrangements, after which the meeting and the future of the Congress will be placed in the hands of its elected officers.

Inasmuch as there is no complete list of ophthalmologists of the Western Hemisphere, it is requested that you notify all members of your society of the proposed Congress and invite them to attend.

Committee of the Pan-American Congress  
of Ophthalmology.

M. E. Alvaro  
Conrad Berens  
Harry S. Gradle.

Sir:

I am enclosing to you a notice of the Prize Award Contest of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons Foundation, Incorporated.

I will appreciate it greatly if you will publish a notice of this in the first available issue of your Journal, in order that those who may desire to submit theses may have ample time for preparation.

With my kind regards, I am,

Sincerely and fraternally yours,

Jas. R. Bloss,  
Secretary.

Ed.—The rules follow:

1. "The award which shall be known as 'The Foundation Prize' shall consist of \$150.00."
2. "Eligible contestants shall include only (a) interns, residents, or graduate students in Obstetrics, Gynecology or Abdominal Surgery, and (b) physicians (with an M. D. degree) who are actively practicing or teaching Obstetrics, Gynecology or Abdominal surgery."
3. "Manuscripts must be presented under a nom-de-plume, which shall in no way indicate the author's identity, to the Secretary of the Association together with a sealed envelope bearing the nom-de-plume and containing a card showing the name and address of the contestant."
4. "Manuscripts must be limited to 5000 words, and must be typewritten in double-spacing on one side of the sheet. Ample margins should be provided. Illustrations should be limited to such as are required for a clear exposition of the thesis." Submit 3 copies of Thesis and illustrations to Secretary.
5. "The successful thesis shall become the property of the Association, but this provision shall in no way interfere with publication of the communication in the Journal of the Author's choice. Unsuccessful contributions will be returned promptly to their authors."
6. "All manuscripts entered in a given year must be in the hands of the Secretary before June 1st."
7. "The award will be made at the Annual Meetings of the Association, at which time the successful contestant must appear in person to present his contribution as a part of the regular scientific program, in conformity with the rules of the Association. The successful contestant must meet all expenses incident to this presentation."
8. "The President of the Association shall annually appoint a Committee on Award, which, under its own regulations shall determine the successful contestant and shall inform the Secretary of his name and address at least two weeks before the annual meeting."

## NEWS

### General

Chairman Norman H. Davis of the American Red Cross announced that at the request of the Surgeon General of the Army, the Red Cross has undertaken the enrollment of various types of medical technologists who are willing to serve in the medical departments of the Army and Navy if and when their services are required at the time of a national emergency.

The enrollment now being inaugurated will be similar to that of the nurses reserve which the Red Cross has maintained for the Army and Navy since 1911, and which is now being expanded to include properly qualified male nurses, and also the reserve of dietitians which has been maintained since 1917.

Persons with the following qualifications will be included:

Chemical Laboratory Technicians (male)  
Dental Hygienists (male and female)  
Dental Mechanics (male)  
Dietitians (male and female)  
Laboratory Technicians (male and female)  
Meat and Dairy Hygienists (Inspectors) (male)  
Nurses (male)  
Occupational Therapy Aides (male and female)  
Orthopedic Mechanics (male)  
Pharmacists (male and female)  
Physical Therapy Technicians (Aides) (male and female)  
Statistical Clerks (male and female)  
X-ray Technicians (male and female)

The Red Cross will work through the various associations and agencies of which these technologists are members, giving to them the details of the plan, including requirements prescribed for enrollment.

In the event of national emergency, the enrolled male technologists who meet the required physical standards will be eligible for enlistment in the Army as non-commissioned officers and in the Naval Reserve as petty officers. Women technologists and men who do not qualify physically, will be eligible for employment by the Army as civilians. Women technologists are not eligible for service in the Navy.

The Navy has indicated that notwithstanding the enrollment with the Red Cross of male technologists eligible for enlistment in the Naval Reserve in emergency, it is desired that in peace-time qualified personnel actually enlist in the U. S. Naval Reserve. The Navy does not require dietitians, occupational therapy aides, orthopedic mechanics or meat and dairy hygienists (inspectors), but all other technologists who may be interested in enlistment in the Naval Reserve are encouraged to communicate with their Naval District Com-

mandant from whom they may obtain full information.

Medical technologists belonging to the groups listed above who are interested, are urged to write National Headquarters, American Red Cross, Washington, D. C., for full information.

The United States Public Health Service has announced that thirteen hospitals would receive government-owned radium on a loan basis within the next few weeks. The radium, weighing about two grams, is valued at approximately \$50,000. Two shipments will be made to Texas one for the El Paso City-County Hospital at El Paso, and the other for the Baylor University Hospital in Dallas.

Dr. Thomas Parran, Surgeon-General of the U. S. Public Health Service, in announcing these loans, stated that the grants were made in cooperation with state departments of health and state cancer commissions. They must also meet high standards regarding personnel administering the treatment. Hospitals receiving the radium must also agree to give preference to patients in the lowest income groups.

### El Paso

The Texas State Department of Public Health and the Texas State Medical Association recently sponsored a Post-Graduate Refresher Course for the physicians of El Paso County and vicinity. Sessions were held at Hotel Cortez. The program was as follows.

MONDAY, FEBRUARY 26th  
Mental Hygiene 2:00 to 3:30 P.M. Pediatrics 3:30 to 5:00 P.M.  
Mental Hygiene 8:00 to 9:00 P.M. Pediatrics 9:00 to 10:00 P.M.  
Dr. T. H. Cheavens, Dallas Dr. F. H. Lancaster, Houston

TUESDAY, FEBRUARY 27th  
LUNCHEON 12:15 to 2:00 P. M.  
Pediatrics 2:30 to 3:30 P.M. Mental Hygiene 3:30 to 4:30 P.M.  
Pediatrics 8:00 to 9:00 P.M. Mental Hygiene 9:00 to 10:00 P.M.

WEDNESDAY, FEBRUARY 28th  
Syphilis 2:00 to 3:30 P.M. Gonorrhea 3:30 to 5:00 P.M.  
Gonorrhea 8:00 to 9:00 P.M. Syphilis 9:00 to 10:00 P.M.  
Dr. D. O. Poth Dr. Nicholson

THURSDAY, FEBRUARY 29th  
Syphilis 2:00 to 3:00 P.M. Gonorrhea 3:30 to 5:00 P.M.  
Gonorrhea 8:00 to 9:00 P.M. Syphilis 9:00 to 10:00 P.M.

FRIDAY, MARCH 1st  
Luncheon 12:15 to 2:00 P.M.  
Obstetrics 2:30 to 3:30 P.M. Tuberculosis 3:30 to 4:30 P.M.  
Obstetrics 8:00 to 9:00 P.M. Tuberculosis 9:00 to 10:00 P.M.  
Dr. Roy L. Groen Dr. F. H. Carman

SATURDAY, MARCH 2nd  
Obstetrics 2:00 to 3:30 P.M. Tuberculosis 3:30 to 5:00 P.M.  
Tuberculosis 8:00 to 9:00 P.M. Obstetrics 9:00 to 10:00 P.M.

A regular meeting of the El Paso County Medical Society was held February 12, 1940, at 8:00 p.m. at Hotel Cortez. The program was as follows:

"Surgical Considerations of Abscesses of Liver"—Dr. L. Villareal. Discussion by Drs. J. A. Hardy, W. W. Waite and J. Murphy.

"Psychologic Aspects of Pediatrics"—Dr. I. M. Epstein. Discussion by Drs. P. McChesney, J. A. Hardy and M. P. Spearman.

New members: Drs. Newton Walker, John Martin and Charles E. Webb.

A regular meeting of the El Paso County Medical Society was held February 26, 1940, at 8:00 p.m. at Hotel Cortez. The program scheduled for this

meeting was turned over to the speakers who were sent out by the Post-Graduate Refresher Courses, sponsored by the Texas State Department of Public Health and the Texas State Medical Association. They were Dr. Frank Lancaster, who spoke on pediatrics, and Dr. T. H. Cheavens, who spoke on mental hygiene.

Dr. Raymond P. Hughes was granted the degree of Master of Science in Medicine by the University of Pennsylvania. His thesis concerned the use of sulfanilamide in dermatology.

A regular meeting of the City-County Hospital Staff was held Wednesday, February 21, 1940, at 6:30 p.m., at City-County Hospital. Drs. W. W. Waite and G. Werley presented cases of syphilitic aortitis.

The regular meeting of the Staff of the Hotel Dieu Sisters' Hospital was held Tuesday, February 6, 1940, at 12:10 o'clock in the auditorium of the Nurses' Home. Luncheon was served. The program was as follows:

"Death from Suspected Foreign Body of the Bronchus"—Dr. W. E. Vandever. Discussion by Drs. J. T. Bennett and C. H. Mason.

"Pneumonia, Diagnosis and Treatment with Special Reference to Sulfapyridine"—Dr. C. E. Jumper, Dr. Chester Awe and Dr. J. Rogde.

At the recent convocation of the International College of Surgeons at Venice, Florida, Fellowships were conferred on Drs. Paul Gallagher and Felix Miller, of El Paso.

Drs. Louis Breck and M. P. Spearman recently addressed the Grant County (New Mexico) Medical Society on "Recent Advances in Orthopedic Surgery" and "Advances in Otolaryngology" respectively.

Dr. Vincent Ravel has recently been on active duty with the U. S. Navy at the Naval Air Base, Pensacola, Florida. Dr. Ravel holds a commission in the U. S. Naval Reserve in the grade of Lieutenant. j. g.

### AUXILIARY NEWS

The regular meeting of the Woman's Auxiliary to the El Paso County Medical Society was held Monday, February 12, 1940 at the home of Mrs. Bloyce Britton. Mrs. Branch Craige, President, presided.

The report of the Nominating Committee was given and the following officers were nominated for the year 1940-41:

President-elect, Mrs. Henry T. Safford, Jr.  
1st Vice-president, Mrs. A. P. Black.



2nd Vice-president, Mrs. Leslie Smith.  
 3rd Vice-president, Mrs. J. W. Cathcart.  
 Treasurer, Mrs. Jesson Stowe.  
 Recording Secretary, Mrs. Jacob Rogde.  
 Corresponding Secretary, Mrs. S. G. Von Almen.  
 Election will be held at the next meeting.

The recommendation was passed that the Budget Committee make the following donations:

1. \$75.00 to the Baby Sanatorium at Cloudcroft, New Mexico.
2. \$25.00 to the Student Loan Fund (for medical students).
3. \$25.00 to the Memorial Loan Fund.

Mrs. Louis Breck then gave her talk, the subject being, "Recent Aspects of Socialized Medicine".

The meeting was adjourned and tea was served. The hostesses assisting Mrs. Britton were: Mesdames A. D. Long, C. H. Mason, T. J. McCamant, Paul E. McChesney, Irving McNeil, Felix Miller, J. D. Petcolas, R. L. Ramey, J. A. Rawlings, J. Mott Rawlings, Samuel Rennick, Paul Rigney, J. Rogde, E. B. Rogers, Henry Safford, Sr., and H. Earl Rogers.

—Malvina Spearman.

## MISCELLANY

### POTENCY OF COAGULANTS

There are many commercial preparations on the market which are offered for use as hemostatic agents by virtue of their supposed ability to increase the coagulability of blood. Some are derived from brains of a variety of animal species, some from tissue fibrinogens, and some from bovine blood and from horse serum. They are available for use either topically, *per oram*, or by hypodermic injection. Finally there are the several types of snake venom. The efficacy of all of these is extolled by their manufacturers, in many instances based upon experiments conducted on laboratory animals. But since these coagulants are to be used in humans it is of little practical value whether or not a particular product will materially shorten the coagulation time of rabbit blood. It would seem that the only valid test of potency would be the estimation of its activity on human blood.

Aggeler and Lucia<sup>1</sup>, using human plasma, assayed biologically the coagulative potency of seventeen of these products, and their findings reveal a great discrepancy with claims made by the manufacturers of these agents. The only substances studied that were significantly active were the crude tissue emulsions of thromboplastin intended for local use and the two snake venoms (Fer-de-lance and Russell viper). The fibrinogen products proved relatively impotent as coagulants and the thromboplastin intended for hypodermic use was found to be inactive. Horse serums were inactive in human hemophylic plasma except in high concentrations, and then only to a slight degree. The

commercial product made from bovine blood yielded no coagulative activity in any concentration.

No one more than the physician realizes the need for potent hemostatics. The continued manufacture and sale of impotent agents shows a disregard by the makers for the results of scientific study. Two of the products, bovine blood derivative and hypodermic horse serum, were shown twenty years ago to possess no coagulative action<sup>1</sup> and yet they are still being manufactured and used. The work of Aggeler and Lucia should make commercial houses take stock and discontinue the sale of biologicals which medicine has shown to be ineffectual.

<sup>1</sup> Aggeler, P. M., and Lucia, S. P.: Am. J. M. Sc. 199: 181 (Feb.) 1940.

—N. Y. St. J. Med.

### ALLERGY—A BRIEF OUTLINE

Orville Harry Brown

Phoenix, Arizona

Allergy: A Metabolic-Immunologic Disturbance.

Primary Cause: Not known. May be deficiency factor. One patient attributes cure ('several years' relief) of her asthma to drinking fresh ox-blood.

Contributing Causes and Treatment—

I. Heredity: Prophylaxis may benefit next generation.

II. Allergens.

1. Inhalants and Contactants.

- a. Floor covering and hangings of patient's room should be practically eliminated.
- b. Dust should be wiped up daily with moist or oil mops.
- c. Pillows and mattress should have dust-impervious coverings.
- d. Bed covers and clothing should be selected after suitability has been determined by skin tests.
- e. Animal pets must be prohibited—as a rule.
- f. Clothing and powders worn by attendants and visitors may be a danger.
- g. Exhaustive intradermal skin-tests should be made for all possible substances which may be in atmosphere or near patient.
- h. Vaccines should be prepared for all substances to which patient is found sensitive—in addition to special efforts to eliminate them. Such vaccines should be used for a long time, even though good results are or are not apparent.
- i. Pollens should be considered possible causes of any sort of allergy even though no hay-fever exists. Intradermal tests with dilutions of 1/5000 pollen vaccines are advisable.

2. Foods.

- a. Intradermal skin tests are necessary in severe cases—and advisable in all, and should be for all foods.
- b. The diet should be built of those foods which give definitely negative reactions and should be as varied as possible.

- c. False negative tests are of far more concern than are false positives.
  - d. Stale, over-ripe, even slightly decomposed foods may be highly allergenic and skin tests for them may be negative.
  - e. Selection of prime foods, therefore, is most important.
  - f. Prolonged cooking of foods may make foods safe.
  - g. The "Food-Addition" method of diet (See SW. Med. Aug. 1922) should be used if doubt exists about reliability of skin tests.
  - h. Patient should never be allowed to over-fill his stomach. May be best to feed often.
  - i. Food should be well chewed and not taken when patient is tired, hurried or fatigued.
  - j. Patient must be taught to try to correlate his symptoms with taking of foods.
  - k. Abstaining from harmful foods for considerable periods may render one again able to eat them.
  - l. Foods should always be regarded as of extreme importance even though other factors—for the time being—definitely supercede them in importance; this is because when one gets sensitive to many foods the problem is extraordinarily difficult.
3. Bacteria.
    - a. Infection should be regarded as the start and perhaps even the primary cause of allergy is a complication of infection.
    - b. Foci of infection should usually be conservatively treated. Radical treatment may be needed to effect a cure and should usually be done in all cases—after allergy is sufficiently improved—to prevent relapses.
    - c. Nasal catarrh—nearly universal in all allergics—especially should have careful treatment. The Hazeltine-Dowling packs may be used by all physicians even though not expert in this field. Nasal catarrh is doubly important because bacteria from the nose and throat reach the stomach and harm digestion.
    - d. Sensitivity to bacterial proteins should be tested. I have found stock vaccines (SW. Med. Sept. 1939) in 1-10 dilutions, each type of bacteria from two or more laboratories, to be most satisfactory materials. Autogenous vaccines may be needed to supplement the stock vaccines.
    - e. Vaccines are prepared from the stock—autogenous vaccines tho which a patient is found sensitive by intradermal skin-tests.
    - f. Administration of the "special" vaccines should be continued indefinitely even though relief is obtained early. Tolerance to the vaccine often comes slowly.
  4. Protozoa. Such ingestion should always be sought and if found properly treated.
  5. Molds. These should be routinely tested for;

they are important in many cases—probably more than ordinarily suspected. Vaccines should be used if indicated.

III. Vitamin deficiencies may underlie allergy, or may develop because of inadequate diet during treatment. It is well to give vitamins, ad libitum for a time at least, if patient is not allergic to them. Various sources should be drawn upon, for the vitamins.

IV. Mineral deficiencies: Calcium benefits some allergics; potassium chloride may be useful occasionally in hay-fever.

#### V. The Endocrines.

1. Allergics commonly have hypothyroidism which should be treated. A metabolism test should be routine.
2. Many have other hormone deficiencies or dysfunctions which should be routinely treated even though results are not always definite.

#### VI. Gastro-Intestinal factors.

1. Inadequate acid often exists and should be supplied.
2. Pepsin may be given to advantage.
3. Pancreatic ferments may be helpful.

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Supplement No. 6 to Venereal Disease Information,  
p. 14 and 49, United States Public Health Service.

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4. Gastro-intestinal toxins; enemas, mild laxatives, Kaolin, bulk producing materials may be helpful in removing them and should be tried when results from other treatments are not satisfactory.

VII. Nervousness: This should be controlled. It probably produces its most serious effect through the digestive system, and demands treatment directed at the digestive tract, as well as at the nervousness.

#### "CANCER QUACKS"

Neither do I believe it helps in the fight against the cancer quack when a prominent surgeon goes about, telling that he has never cured a certain type of cancer and that anyone who claims a cure must have made a wrong diagnosis. There are several explanations for discrepancies of this kind between the opinions of physicians. Perhaps, the most plausible one is that the physician has operated only patients in the very latest stages. The effect of such a pessimistic statement on the part of the physicians who see only a few cancer cases a year and on the public cannot be underestimated. Many physicians and all lay people regard cancer as a single disease, a view which is, of course, entirely wrong.

Under the general term "cancer" have been

grouped a great variety of clinical diseases which differ widely in clinical course, prognosis, and radiosensitivity. Even in the same organ, as in the breast, "cancer" may be of the inflammatory variety which spreads, regardless of treatment, and kills in a few months, and on the other hand, may be of the "colloid type" which may go on for years and never cause metastases. As long as the laity does not know there are many clinical entities in the field of "cancer", I believe it is unwise to use the term "cancer" before a patient.

A well known surgeon said once that the medical profession will never succeed in stopping cancer quackery until laboratory research has given the physician therapeutic and preventive weapons as effective against cancer as those we have today against diphtheria. It is true that there are no quacks for treating diphtheria.

However, I believe our attitude should be less pessimistic, even under present conditions. If all available methods of detection, diagnosis, surgery, and radiation were to be brought to universal use, half of the present annual toll of 150,000 cancer deaths in the United States could be avoided, according to the foremost cancer students in this country.

Likewise, to aid in this achievement, all possible effort must be given to the extinguishment of the cancer quack.—*J. Kans. Med. Soc.*

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\*"Treatment of Acute Anterior Urethritis with Silver Picrate," Knight and Shelanski, *AMERICAN JOURNAL OF SYPHILIS, GONORRHEA AND VENEREAL DISEASES*, Vol. 23, No. 2, pages 201-206, March, 1939.

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## BANTI'S DISEASE

Guido Banti (1852-1927), professor of pathological anatomy of the medical faculty of the University of Florence, Italy, published his first account of the disease which bears his name in *La semaine medicale* (14:318, 1894). It is entitled "La splenomegalie avec cirrhose du foie." The original Italian draft of this article appeared a month later in *Lo sperimentale, sezione biologica* (48:447-452, 1894), with due credit to the French journal. An English translation appeared in the English edition of *La semaine medicale* (2:364, 1894). The following quotation is from the English version:

In 1882, my attention was directed to the existence of a symptomatic and anatomo-pathological complexus which, so far as I am aware, has never been described, and which may well be considered as a special kind of disease, namely, *splenomegaly with cirrhosis of the liver*. . . .

The symptoms of the disease may be divided into three groups, corresponding to as many periods, viz., the *prae-ascitic* stage, the *ascitic* stage, and an *intermediate* stage.

The symptoms of *prae-ascitic* stage are, tumefaction of the spleen and anaemia. . . .

In the cases with which I have had to deal, the *praeascitic* stage varied in duration from one year to four years and a half.

The *intermediate* stage is characterized by the appearance of dyspnoea, intestinal disorders, and sometimes haemorrhoids. . . . This stage lasts a few months.

In the *ascitic* stage a liquid effusion takes place into the peritoneum. . . . The anaemic symptoms become more and more marked; but the examination of the blood continues to give evidence of a normal number of leucocytes. This stage lasts from seven to eight months and ends in death.

—N. E. J. of Med.

## BOOK NOTES

HANDBOOK OF ORTHOPAEDIC SURGERY. Alfred Rives Shands, Jr., B.A., M.D. Pp. 567. Illustrations 154. 2nd edition. Cloth. St Louis, The C. V. Mosby Co. 1940.

This reviewer is of the opinion that every general practitioner and pediatrist should read this book. It is divided into twenty-four chapters, each one of which can be read in about thirty minutes. There are two chapters on congenital deformities followed by one each on affections of growing and adult bone. Sixty-three pages are devoted to non-tuberculous infections of the bones and joints, and there are forty-two pages on tuberculous infections of the bones and joints. Beginning with infantile paralysis, there is an excellent discussion of the neuromuscular disabilities. There are chapters on tumors, disabilities associated with fractures, and body mechanics, and physical therapy. The remainder of the book is devoted to a discussion of the more common affectations of the spine

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and thorax and the upper and lower extremities. A complete bibliography for each chapter is near the back of the book. The author is certainly to be commended for having substituted 154 excellent sketches instead of the customary poorly reproduced roentgenograms.—E. W. S.

**INJECTION TREATMENT** of Hernia, Hydrocele, Ganglion, Hemorrhoids, Prostate Gland, Angioma, Varicocele, Varicose Veins, Bursae, and Joints. Penn Riddle, B.S., M.D., F.A.C.S., Assistant Professor of Clinical and Operative Surgery, Baylor University, College of Medicine. Director of Varicose Vein Clinic, Parkland Hospital, Dallas, Texas. W. B. Saunders Company, Philadelphia and London. 1940. 290 pps. 153 illustrations. Price \$5.50.



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This very readable volume covers the injection treatment of Hernia, Hydrocele, Ganglion, Hemorrhoids, Prostate Gland, Angioma, Varicocele, Varicose Veins, Bursae, and Joints.

The author presents in each of these conditions the etiology, the anatomy, the diagnosis of the condition, together with the indications, contraindications, complications, and the results of sclerosing treatment. The book is designed for the general practitioner and is especially written to provide guidance in these procedures which can be carried out in the doctor's office. Dr. Riddle has succeeded in presenting his subject interestingly and concisely.

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The rather recent revival of the injection treatment of hernia makes this text an opportune one. This technic is well described and graphically illustrated in excellent anatomical drawings and pictures. There is a chapter on the types and uses of trusses and truss pads with worthwhile discussion. The various types of sclerosing solutions are described and discussed. The author is no fanatic on the sclerosing treatment of hernia but believes that there are definite limitations to its usefulness as well as good results in properly selected cases.

Dr. Riddle has the faculty of simplifying the consideration of the injection treatment of varicose veins. This generally accepted method of treatment is described in detail and beautifully illustrated. The various tests of the venous circulation of the lower extremity are described and illustrated. The treatment of varicose ulcer is also given. The combination of venous ligation and sclerosing treatment is discussed.

In similar manner the technic of injection treatment of hemorrhoids, hydrocele, varicocele, etc., is well described.

Too much cannot be said about the 153 illustrations found in this book. It is a worthwhile and timely volume which should receive an enthusiastic reception from the profession.—R. B. H., Jr.

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VCL. XXIV

EL PASO, TEXAS, APRIL, 1940

THE N.Y. ACADEMY  
OF MEDICINE

No. 4

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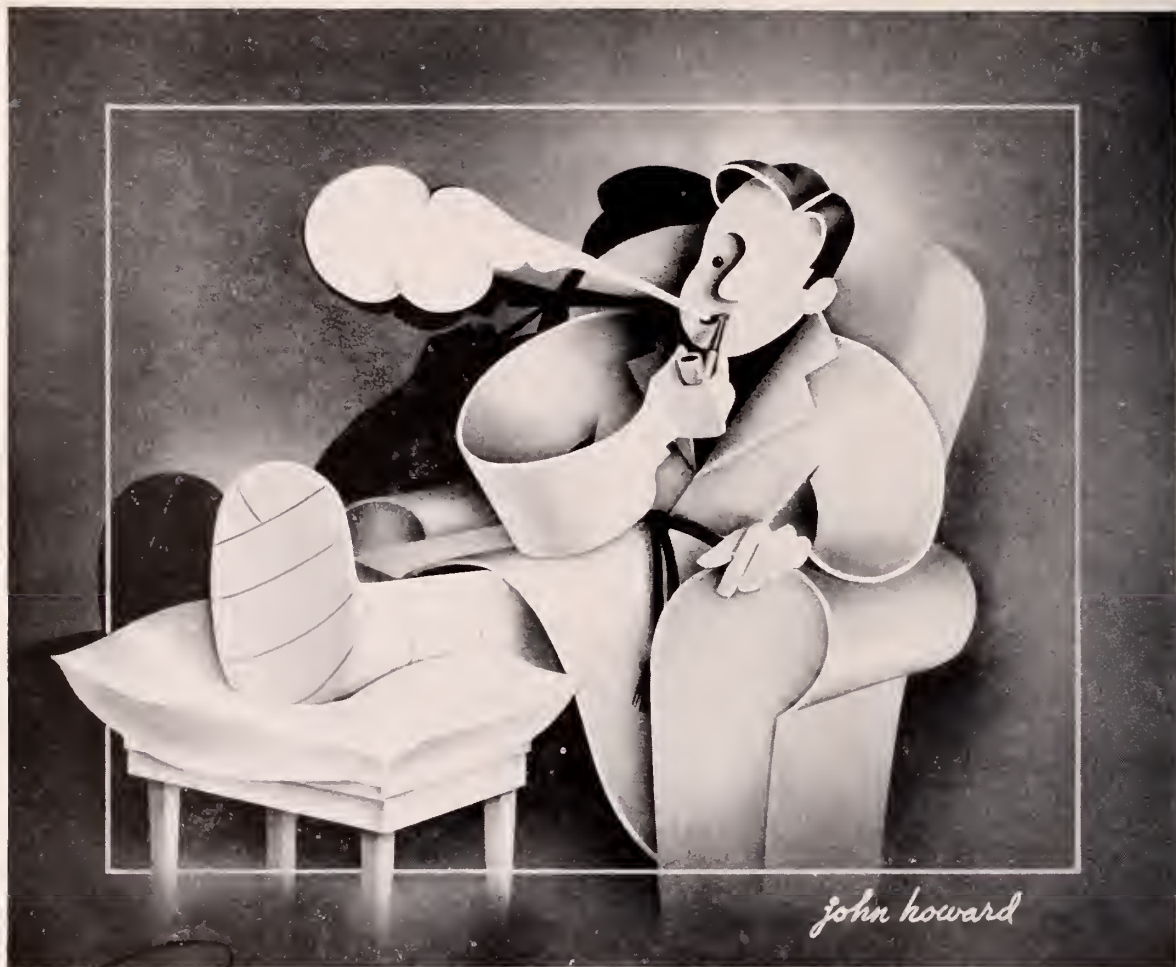
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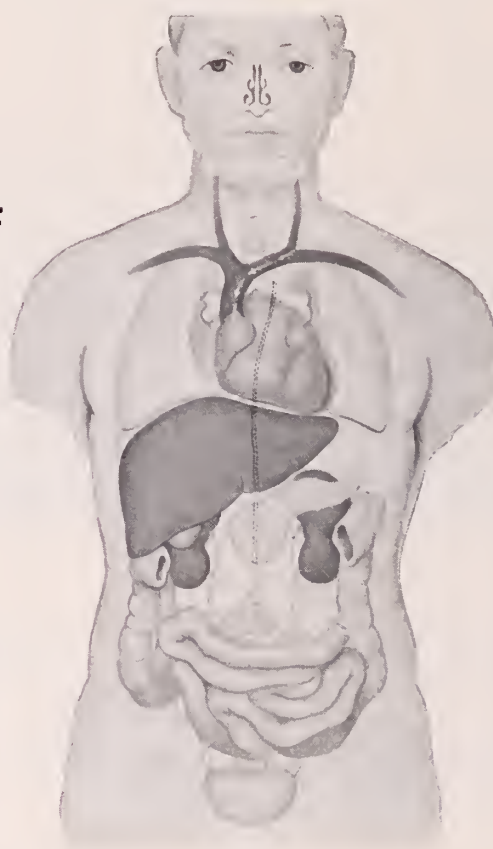


This page is the fourth of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A full color, two-page insert on the same subject appears in the April 6 issue of The Journal of the American Medical Association.

## Metabolic Fate of Vitamin A and Carotene

Vitamin A and carotene are absorbed into the lacteals with the fat of the food ingested. It is generally agreed that vitamin A in large quantities is more speedily absorbed than are similar quantities of carotene.

The fat-soluble vitamins enter the general circulation by way of the thoracic duct. In the liver, vitamin A and carotene are taken up by the Kupffer cells, where carotene is slowly converted to vitamin A. Experimental studies indicate that vitamin A is stored in the liver in certain species, including man.



## The Causes of Vitamin A Deficiency

Vitamin A deficiency may be caused by inadequate intake of the vitamin or provitamin. Absorption may be retarded, depending on the condition of the alimentary tract. For example, mineral oil in the intestine diminishes absorption of carotene although not of vitamin A. Conversion of carotene to vitamin A in the liver may not occur, as in diabetes mellitus, where evidence indicates that the rate of transformation of carotene is diminished, and vitamin A deficiency may develop even if the diet provides the provitamin in amounts ordinarily sufficient.

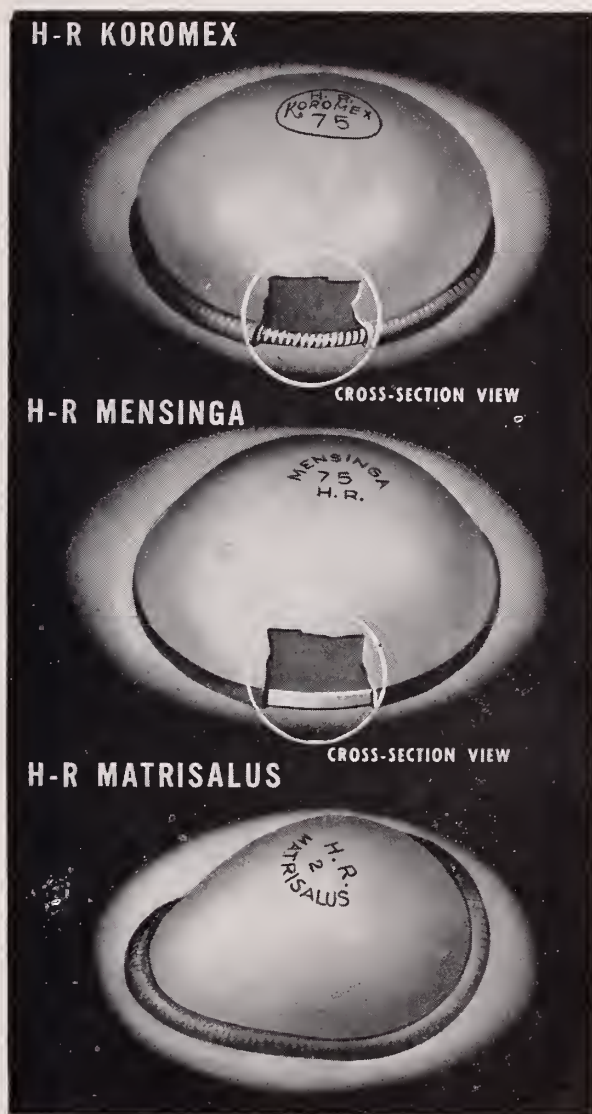
## Effects of Vitamin A Deficiency

Vitamin A deficiency produces pathologic changes in many organs. The process is one of alteration of epithelial surfaces — keratinizing metaplasia of the epithelium of the urinary bladder, the ureters, the ducts of the salivary glands and the pancreas, the trachea, and the nose. In the eye, vitamin A deficiency interferes with restoration of visual purple, resulting in night blindness. Prolonged vitamin A deficiency produces xerophthalmia. Administration of adequate quantities of vitamin A to patients manifesting symptoms of deficiency usually checks the progress of epithelial alteration.





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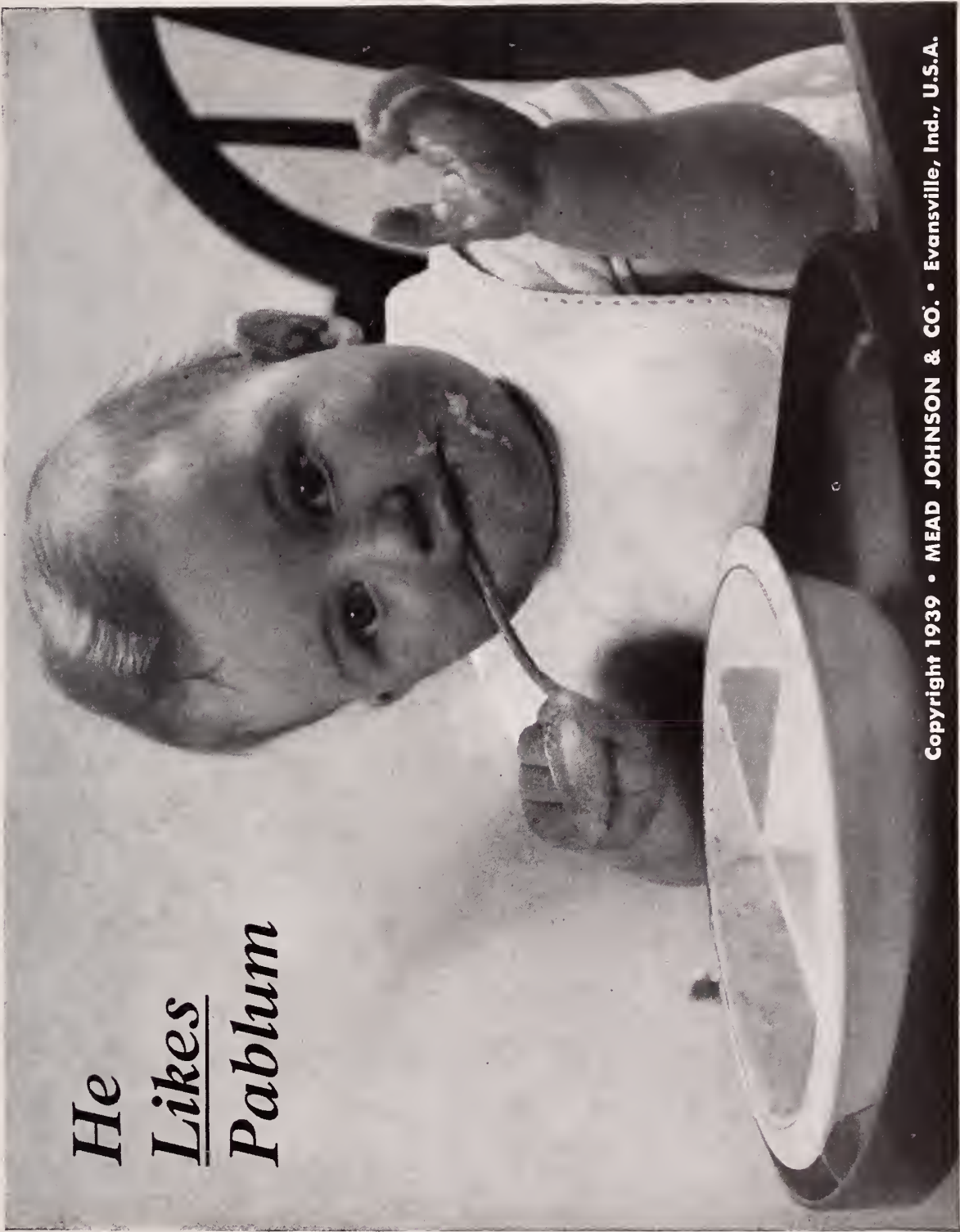


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VOL. XXIV

EL PASO, TEXAS, APRIL, 1940

No. 4

## Gastroscopy — Role in Private Practice

(Review of 100 Cases)

NORMAN GIERE, M. D.  
*El Paso, Texas*

THE purpose of this paper is to review the findings in 100 gastro-intestinal cases seen in private practice in which gastroscopic examinations were carried out. Other series have been published by workers taking their material from large hospital clinics. Believing that it might be interesting to see just what role gastroscopy plays in everyday private practice those examinations which were done in University hospitals, etc., are purposely excluded from this report. The statistical tabulation of gastroscopic diagnosis will be shown and each group of gastric lesions seen will be briefly discussed. Case histories of some of the more interesting conditions will be presented. The following is a tabulation of the frequency of various conditions seen:

Normal stomach .....	27
Hypertrophic gastritis .....	29
Superficial gastritis .....	18
Atrophic gastritis .....	7
Benign ulcer .....	7
Carcinoma .....	6
Sarcoma .....	1
Benign polyps .....	2
Post operative stomach .....	3
Total .....	100

[These figures show a remarkable similarity to those in Schindler's series of 1255 cases. The great bulk of his cases represent those done in large free clinics.]

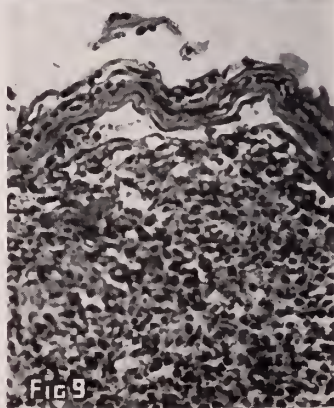
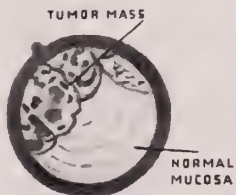
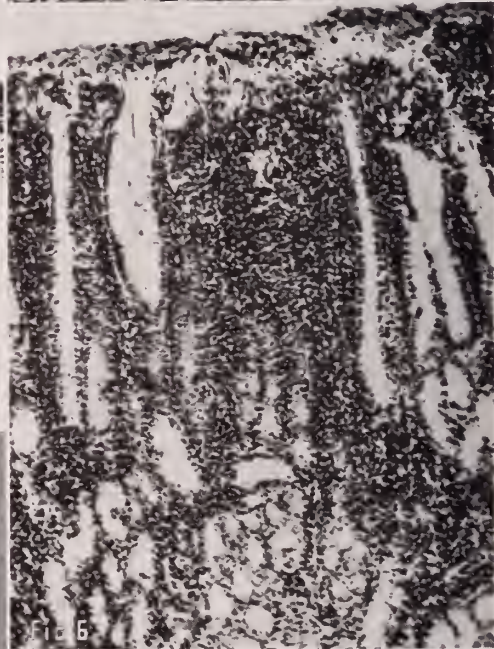
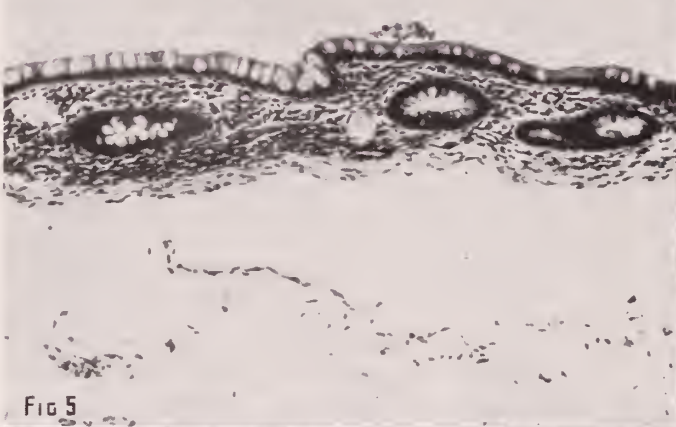
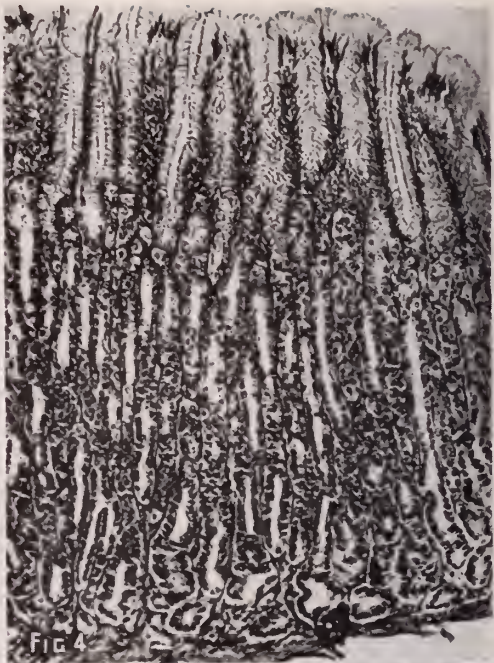
### HYPERTROPHIC GASTRITIS

This condition was found most frequently in this series of 100 cases. The gastroscopic picture here shows a dull swollen mucous membrane with granular nodules, and very frequently erosions involving the mucous membrane. Microscopic sections show a proliferation of the mucous membrane and cellular infiltration of the interstitium. All of these patients complained of epigastric discomfort. Some described a burning pain, others spoke of a dull heavy type of pain. Whereas some felt better after eating, others felt better on an empty stomach. In short, there was no typical, uniform complaint such as we usually see in peptic ulcer. Gastric analysis may show a normal content of free HCl, but usually there is a decrease in free HCl roughly proportionate to the degree of chronicity. Although this condition may cause as much discomfort to the patient as does an ulcer it may be associated with other disturbances of the gas-

tro-intestinal tract, and the gastroscopist must be cautious about ascribing every symptom to minor changes in the mucous membrane. That these changes in the mucous membrane may also act as a precursor to carcinoma is suggested by the fact that two cases which underwent surgery at the Mayo Clinic<sup>1</sup> were shown to have a benign hypertrophic condition at biopsy, and within four and fifteen months respectively each again underwent surgery and carcinoma was found in the previously benign hypertrophic gastritis. One of our cases showed a large filling defect by x-ray. The radiologist referred the case for gastroscopy where the lesion was seen and believed to be a benign hypertrophic condition involving the cardia. The patient has been on symptomatic treatment for three months during which time he has felt well, retained his ample weight, and feels generally improved. The radiologist recently examined him again and stated that the lesion was smaller; this was also shown at the second gastroscopic examination. Though no biopsy was possible in this case, his clinical course seems to substantiate the gastroscopic diagnosis<sup>2</sup>. Schindler has recently presented seven cases of proved hypertrophic gastritis simulating tumor. A high percentage of gastro-intestinal complaints following gastric surgery have been shown to be due to this condition which were formerly thought to be due to recurrent ulcer. Although there is no specific treatment for hypertrophic gastritis considerable relief can be brought about by intelligent management.

### SUPERFICIAL GASTRITIS

This condition was found in 18% of this series of cases. Though superficial gastritis comes under the heading of the chronic group it has many features which resemble the acute forms of gastritis. It is the most responsive to treatment and in most cases goes on to complete recovery. Gastroscopically we see a very swollen mucosa which is usually hyperemic in contrast to the hypertrophic type. Shallow ulcerations and hemorrhages are usually seen. The etiology of this condition is no more certain than is that of peptic ulcer, but it seems that chronic irritations, foci of infection, and an inherent tendency are the most important factors. One of our cases was a man 35 years of





age, from a ranch in West Texas. He had been vomiting daily for the past six weeks, and complained of midepigastic distress together with a weight loss of 15 pounds. Physical examination disclosed no abnormal findings other than a very severe pyorrhea. X-ray examination showed no filling defects in the stomach or bulb. On 10-7-39 gastroscopic examination showed an extreme edema of the entire mucosa with ulcerations and hemorrhagic erosions. He was put to bed for ten days on an ulcer-like regime and became symptomless in two days. Two weeks later he had his teeth removed. He was seen again on 11-20-39. At this time he showed a weight gain of twelve pounds in spite of his dental ordeal and had no complaints. Gastroscopy at that time showed a very different picture from before. There were no erosions or hemorrhages and the swelling had subsided so that the mucous membrane was almost normal in appearance. Schindler<sup>3</sup> states that without adequate medical care about 20% of the cases of superficial gastritis go on to the atrophic type.

#### ATROPHIC GASTRITIS

This condition was found in 7% of this series. It presents a very definite gastroscopic picture, and is an abnormality which causes considerable distress to the patient. Its relation to other constitutional diseases makes it a most interesting condition to study. The gastroscopic picture presents a thin, grayish mucous membrane, the thinning of which makes it possible to visualize the blood vessels lying in the submucosa. These atrophic changes may be present throughout the entire stomach but are more usually seen near the cardiac end. Very frequently erosions or hemorrhagic areas are also seen. The microscopic picture shows a thinning of the mucous membrane with a cellular metaplasia resembling goblet cells, and extensive infiltration or round cells. The patient suffering from this condition complains of various types of epigastric discomfort, and characteristically complains of general constitutional symptoms as well. Thus<sup>4</sup> in a study of 41 cases of uncomplicated atrophic gastritis it was found that anorexia, nausea, pain, loss of weight and discomfort after eating were the principal digestive complaints, and in two-thirds of these cases complaints of weakness and fatigue appeared. This is in sharp contrast to findings in other benign gastro-intestinal disorders. Several theories have been postulated to explain this fact. 1. The atrophic mucosa may

produce a toxin which is absorbed by the blood. 2. Some unknown substance present in the normal mucosa which normally prevents the development of general weakness, etc., may be absent in the atrophic mucosa. 3. The utilization of food, especially protein, may be disturbed in the atrophic stomach. 4. The complete absence of gastric acid may inhibit the functions of other organs, especially the pancreas. Gastric analysis indicates that only about one-third of the cases have a complete achlorhydria so it must be assumed that typical symptoms are more the result of anatomic changes in the gastric mucosa than as a result of the achlorhydria. The relation which atrophic gastritis bears to other diseases is an interesting study. All gastroscopists agree that carcinoma of the stomach is more likely to develop from the soil of an atrophic gastritis. Hurst<sup>5</sup> has shown that chronic gastritis was present in 75% of gastric carcinoma and that this condition was present for years preceding the development of carcinoma. One of my cases had been treated for years for pernicious anemia. She did have an achlorhydria and a high color index, although blood study by a competent hematologist did not show typical morphological changes for pernicious anemia. On gastroscopic examination a cancer in the antrum of the stomach was found early enough to allow resection. It is most likely, considering the time element, that she had a preceding atrophic gastritis from which the cancer developed. There is general agreement amongst pathologists, gastroscopists, and clinical gastroenterologists that this relation between atrophic gastritis and carcinoma exists. It is for this reason that Eusterman of the Mayo clinic amongst others emphasizes the importance of gastroscopic and x-ray follow up in these cases. Pernicious anemia also bears an interesting relation to atrophic gastritis and it is possible that the direct observation of the gastric mucosa in this disease may assist in throwing new light on its pathology.

Much can be done to alleviate the distress caused by atrophic gastritis. Only one of this group failed to show very definite subjective improvement on a regimen which consisted of dietary and medical management. One of these patients had previously been through a very extensive diagnostic work up in an attempt to find a malignancy which his appearance and clinical story suggested. On gastroscopic examination an almost complete atrophy was seen together with mucosal erosions. On simple management he gained 40 pounds over a year's time and was symptom-free for long intervals, having only relatively mild periodic recurrences of distress. Frequent gastroscopic examinations, however, showed no improvement of the atrophic condition of the mucous membrane. Very recently<sup>6</sup> desiccated hog's stomach (ventriculin) in massive dosage has been shown to bring about an actual disappearance of the atrophic changes. The obvious suggestion is that atrophic gastritis may be due to a deficiency of some substance which is present in desiccated hog's stomach extract. If

Fig. 1.—Showing one polypoid growth near the cardia.

Fig. 2.—Note the greyish, swollen appearance of the mucous membrane, indicative of an atrophic gastritis, and the presence of 3 polyps near the pyloric orifice.

Fig. 3.—Showing the large polyp seen in roentgenogram (Fig. 1). Mucous membrane again shows a picture of atrophic gastritis.

Fig. 4.—Normal stomach mucosa.

Fig. 5.—Atrophic gastritis.

Fig. 6.—Chronic gastritis.

Fig. 7.—Author's case of lymphosarcoma of stomach—x-ray view.

Fig. 8.—Author's case of lymphosarcoma of stomach—sketch of gastroscopic view of mass in antrum of stomach.

Fig. 9.—Author's case of lymphosarcoma of stomach.

these findings are further substantiated it will be a most important discovery not only as a treatment for the disease itself, but also as a prophylactic for potential gastric carcinoma and possibly pernicious anemia.

### BENIGN ULCER

In this series we find seven cases of true gastric ulcer. In the diagnosis of this condition we have a splendid example of the value of gastroscopy as a complement to x-ray and vice versa. In a controlled series of cases it was found that both methods had their advantages and were able to demonstrate the lesion where the other failed to do so. It is known that lesions in or near the cardia are often difficult to demonstrate radiologically. In these cases gastroscopy may be of great aid. Furthermore, in ulcers which have a very shallow crater the displacement of barium may be so slight as to not allow its visualization. Schindler has stated that complete epithelialization of ulcer can be determined only by gastroscopy and that this completion may require as long as two months after refined x-ray compression has failed to visualize any abnormality. This fact was demonstrated in one of the above cases. A compensation case was brought to court and the decision rested on whether a gastro-intestinal lesion was present. X-ray examination failed to show any abnormality, but gastroscopy showed an area of intense swelling surrounding a healing gastric ulcer. It is in the differentiation of benign and malignant lesions, however, that gastroscopy probably finds its greatest usefulness in connection with gastric ulcers. The gastroscopic picture of each is quite distinctive. The benign ulcer presents a punched out appearance with clean-cut margins and a smooth grayish floor. In contrast to this the malignant lesions usually show a nodular formation with ill defined margins, and frequently the presence of blood coagula. In addition the process may involve the surrounding tissue. One of the above cases was spared a gastric resection because of the demonstration of an antral lesion's being benign. On the other hand we have presented cases which were called benign by x-ray and malignant by gastroscopic examination and which by biopsy were shown to be early malignancy.<sup>7</sup>

### CARCINOMA

Early diagnosis of gastric carcinoma is the goal of every physician, and any procedure which will be helpful in this respect deserves the greatest consideration, especially when we remember that 25% of all cancer deaths are due to gastric malignancy. In the opinion of the author the greatest difficulty in diagnosing early gastric carcinoma lies not so much in our inability to demonstrate the lesion by x-ray or gastroscopy, but rather in getting the patient to present himself to a physician while the lesion is still in the early stage. Admitting this difficulty we must still concede that many cases which have presented themselves to physicians have been overlooked until such time

that the diagnosis was evident without the aid of any refined procedure. It is this group which challenges our diagnostic skill. The case mentioned briefly under atrophic gastritis is a good example of a missed diagnosis of an early lesion until gastroscopic examination disclosed its presence. Although this patient had been consulting with physicians for six months, no attempt was made to examine her gastro-intestinal tract because they assumed that because her blood picture resembled that found in pernicious anemia, that that condition existed and explained the symptomatology. This is a very dangerous assumption since constant slow seepage of blood from the gastro-intestinal tract may frequently give a hyperchromic type of anemia. Fortunately the correct diagnosis was established sufficiently early to allow resection.

It seems that it is an idle argument as to which is the superior for diagnosis of an early carcinoma, x-ray or gastroscopy. The statement which I feel no one will object to is that the more that we can know about any questionable lesion of the stomach, the more likely we are to handle the case to the greatest advantage of the patient. Gastroscopy then becomes of great value in checking a suspicious area which may be seen by x-ray and which may possibly be due to spasm, extrinsic pressure, etc. Ideally all gastric ulcers should be observed gastroscopically because of the characteristic picture which is afforded of benign and malignant ulcers. It has been shown that the earliest malignant changes of a benign ulcer have been recognized by gastroscopy. In this series of seven cases all were diagnosed correctly by gastroscopy and six of the seven cases had biopsy proofs. Since atrophic gastritis has been definitely shown to be the soil in which carcinoma is likely to develop, isn't it reasonable that known cases of atrophic gastritis should be observed at intervals, following much the same reasoning as in having periodic chest x-rays or people exposed to tuberculosis? Furthermore, if we are so concerned about early diagnosis of carcinoma it might be wise to include atrophic gastritis in our study of the cancer problem as a whole.

### SARCOMA

Sarcoma of the stomach comprises about 1% of gastric neoplasms. Ewing classifies them as follows: 1. Spindle cell myosarcoma. 2. Miscellaneous round cell or mixed cell alveolar sarcoma. 3. Lymphosarcoma. The last mentioned constitute the largest and most important group. In the case to be mentioned the usual detailed case history will be omitted for the sake of brevity, and only the essential facts will be given. The patient, presented himself at the office with a history strongly suggesting peptic ulcer. His distress dated from the previous year, but he had no weight loss, and there were frequent remissions in his symptoms. His hbg. was 87%, R.B.C.: 4.6, free HCl 18° and total acid 43°. All other laboratory findings were within normal limits. The radiologist reported the presence of a duodenal ulcer. On ambula-



tory management he did not do well, and because of pain which persisted even during a strict hospital regimen he was gastroscopied one month following x-ray. Following were the findings: "The pyloric end of the stomach was well seen. The antrum was completely involved by a grayish irregular growth. Some infiltration involved the angulus. The upper parts of the stomach showed edema and hyperemia, but no tumor infiltration. Impression: Malignant growth of the antrum, possible lymphosarcoma." The patient was again x-rayed at which time the conclusion was that a carcinoma was present in the antrum. At surgery the lower third of the stomach was found to be involved in a tumorous mass extending down into the duodenum. Biopsy report showed the tumor to be a dark cell type lymphosarcoma. Because of the involvement of the duodenum a resection was not attempted, but a posterior gastroenterostomy was done and was followed by 15 treatments of 150% erythema dose of deep x-ray therapy. The patient showed great improvement for a while and went back to work. Three months later he began to decline and was given more deep therapy.

The author had studied one other case of gastric lymphosarcoma by gastroscopy with Schindler, and because of the remarkable similarity of the gastroscopic picture it was possible to diagnose the lesion correctly. This case illustrates the value of gastroscopy in diagnosis of obscure lesions, and also the great accuracy which it makes possible. Total extirpation of the lesion is the desired goal in treatment of lymphosarcoma followed by radiation therapy.

#### BENIGN TUMORS

Benign tumors are relatively rare and constitute about 1.3% of all gastric tumors. They occur in comparison to malignant tumors in ratio of 1:200. They are of interest because of their ten-

dency to malignant degeneration. In this series of 100 cases, two cases of multiple benign polyps were found. In a review of 34,670 autopsies at the University of Minnesota we found only 32 cases of this condition. Figures 1, 2 and 3 show how clearly the polyps were demonstrated in contrast to x-ray.

#### CONCLUSIONS

100 gastro-intestinal cases which were examined by gastroscopy, and which were seen in private practice have been reviewed and statistics concerning the frequency of various conditions have been tabulated. Each group of cases has been discussed and certain cases have been individually reviewed. It seems quite clear that gastroscopy is of great diagnostic value in general private practice, and this review seems to substantiate the statement made by Henning<sup>3</sup> of Germany that no diagnostic work up of the stomach was complete without gastroscopic examination. Eusterman<sup>8</sup> recently stated: "It follows that gastroscopy should be looked upon as an indispensable diagnostic procedure in daily medical practice. Routine gastroscopic examination is advised in every case in which a complaint of consistent dyspepsia is made and in which roentgenologic findings are negative; such an examination often discloses the presence of inflammatory mucosal lesions which, until recently, were unrecognized and untreated in this country."

Mills Bldg.

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## Incidence of Agglutinins for Typhoid, Paratyphoid and Brucella Abortus

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GREGORY and Atkinson<sup>1</sup> have pointed out that "for the correct interpretation of the Widal test it is desirable to have information regarding the natural level of agglutinins among a random sample of the population in the particular area in which the test is being made." Topley and Wilson<sup>2</sup>, as well as others, have pointed out that the sera of persons who have no history of enteric infection or of immunization may contain agglutinins for typhoid or paratyphoid—often in titers which might be considered as diagnostic.

\* From the Arizona State Laboratory, Tucson, Arizona.

In order to determine to what extent agglutinins might occur in the sera of residents of Arizona, all blood specimens which have been submitted to this laboratory have been examined for the presence of agglutinins for typhoid, paratyphoid A and B, and Brucella abortus. These specimens, in general, have been submitted from the southern part of Arizona. The majority have been submitted for serological tests for syphilis, and presumably in these cases, there was no indication of enteric or Brucella infection at the time the specimen was taken. These specimens represent every race, oc-

cupation, social and economic level found in the southern portion of the state. We feel, therefore, that 10,000 specimens represent a fair sampling of the area.

EXPERIMENTAL METHODS

The rapid slide method of Welch and Stuart<sup>3</sup> was employed for the detection of typhoid and paratyphoid agglutinins. The method of Huddleson<sup>4</sup> was employed for the detection of Brucella agglutinins. The antigens were manufactured by Lederle Laboratories, except that a portion of the brucella antigen was prepared by Miss Barbara Wilson, technician, Co-operative Bang Eredication Project from a culture supplied by the Bureau of Animal Industry. All tests were performed upon unheated sera, and were carried out on a glass plate, as suggested by Huddleson<sup>4</sup>, rather than on slides, as suggested by Welch and Stuart<sup>3</sup>. Although it has not been possible to compare the tube and plate methods in every case, comparisons which we have made have shown very satisfactory agreement.

RESULTS

A total of 10,000 sera were examined; 9515 did not agglutinate any of the antigens and 485 agglutinated one or more of the antigens in a dilution of 1:20 or greater. Due to the number of possible combinations which might be obtained through the use of five antigens and five serum dilutions, the results cannot be given in detail.

The maximum agglutination titers (i.e., a serum agglutinating in dilution of 1:40, but not 1:80, is listed as 1:40, and not in 1:20 and 1:40) observed are given in Table I. Although higher dilutions have been made in some cases, they are not included. The first column under each dilution contains the number of sera agglutinating the particular antigen in a maximum serum dilution as indicated at the top of the column. The second column (in parenthesis) is the number of sera, agglutinating in that particular dilution, in which there is a definite history of infection or immunization. The third column gives the percentage of these specimens in which there is a positive history of immunization or infection.

The results of the Brucella agglutinations are expressed, for uniformity, on the same basis as the other agglutination tests. Actually, according to the method of Huddleson, they should be reported as 1:25, 1:50, 1:100, etc.

Table II gives the number of sera agglutinating the various antigens in dilutions of 1:20 or greater. Although it is not possible to give all of the combinations, those which appear represent the majority of the reactions observed.

TABLE II

Combinations of antigens agglutinated in dilutions of 1:20 or greater—

Antigens	Number of Sera	Number of Known Infections of Immunizations	Percentages of Known Infections of Immunizations
Typhoid H	48	43	90%
Typhoid O	63	42	67%
Paratyphoid A	27	15	55%
Paratyphoid B	10	8	80%
Brucella Abortus	27	17	63%
Typhoid H. and O.	90	72	80%
Typhoid H. O, Paratyphoid A & B	147	140	95%
Typhoid H. O, Paratyphoid A, B, & Brucella abortus	3	0	0
Typhoid H, Paratyphoid A & B	13	9	69%
Paratyphoid A & B	6	0	0
Typhoid H. and Paratyphoid A	6	4	66%

In all cases it has not been possible to get complete histories of infection or immunization. Fairly complete records were secured from students at the University of Arizona. In September, 1938, 1042 blood specimens were submitted by the University Health Service for new students. The results are:

Number of Specimens	1042
Number agglutinating one or more antigen in a dilution of 1:20, or higher	42
Number of known immunizations or infections	32
Percentage of agglutinations	4%
Percentage of agglutinations, "Positive History"	3%

If these University students are used as a basis of comparison, the incidence of agglutinins among persons who have no history of immunization or infection is approximately 1%.

Table III gives, in detail, the agglutination reactions of these students who had no history of immunization.

TABLE III

Agglutination reactions of students with no history of infection or immunization—

Student	Typhoid H	Typhoid O	Paratyphoid A	Paratyphoid B	Brucella abortus
M. A.	—	1:40	—	—	—
C. P.	—	1:40	—	—	—
A. K.	—	1:40	—	—	—
M. B.	1:320	1:320	1:320	1:320	—
M. P.	1:320	1:320	1:320	1:320	—
B. S.	—	—	1:40	—	—
I. P.	1:40	—	—	—	—
L. P.	1:40	1:40	—	—	—
N. G.	1:40	1:80	—	—	—
W. H.	—	1:40	—	—	—

In a group of 154 students at the Arizona School for the Deaf and Blind, 145 did not agglutinate any antigen. Of the nine who did agglutinate one or more antigens (5.8%), five had histories of immunization or infection. In the group of four who

TABLE I

Maximum agglutinating titers

(Figures in parenthesis indicate number of known infections or immunizations, percentages refer to known "positive histories".)

Antigen	1:20		1:40		1:80		1:160		1:320						
Typhoid H	6	(4)	66%	198	(184)	93%	68	(48)	71%	29	(18)	62%	33	(25)	76%
Typhoid O	8	(5)	62%	172	(156)	91%	43	(27)	63%	26	(21)	58%	38	(28)	74%
Paratyphoid A	7	(3)	43%	140	(127)	91%	40	(30)	75%	15	(9)	60%	17	(12)	71%
Paratyphoid B	5	(3)	60%	117	(115)	88%	37	(32)	87%	5	(5)	100%	20	(7)	35%
Brucella abortus	4	(4)	100%	10	(4)	40%	12	(6)	50%	4	(1)	25%	12	(9)	75%



had no history (2.6%), one agglutinated Typhoid H, 1:80; one, Typhoid H and Typhoid O, 1:40; one Typhoid H, 1:80 and one Typhoid O, 1:160.

In a group of 132 immunized children at the Pima County Preventorium, 19 showed some agglutination with one or more of the antigens.

### DISCUSSION

The preceding tables have shown that, in general, the incidence of agglutinins among persons who have no history of infection or immunization is quite low. In a series of 10,000 sera, only 485 (4.85%) showed any agglutination. Since a large proportion of these had histories of immunization or infection, the incidence of agglutinins among persons with no history is lower than that reported for Alabama by Havens<sup>5</sup>, Oregon by Sears\*, and those given by Topley and Wilson<sup>2</sup>.

Twenty-seven sera (0.27%) agglutinated *Brucella abortus*; 17 (63%) had been clinically diagnosed, out of the ten with no history, one was a butcher, one a dairyman, and a large percentage of the remainder were Indians. This percentage is lower than that reported by Gersh and Murgrave<sup>6</sup> who found that 1.2% of a series of 5,000 sera submitted for a Wasserman test gave agglutination with *Brucella* antigen.

Shaughnessey and Grubb<sup>7</sup> have reported from three to nine per cent positive *brucella* agglutination tests in tubercular patients who gave negative skin tests for *brucella* infections. Although we have no records as to the number of tuberculars in our series, we have reason to believe that they are fairly great. Because of the lack of this information, it is not possible to compare our results directly with those of Shaughnessey and Grubb. It seems quite possible, however, that some of the agglutinations reported for persons with no history of immunization or infection, may be non-specific and may be due to tuberculosis or other infections.

During the course of this investigation, we have had the opportunity of examining specimens from known cases of infections (or immunizations) over a fairly long period. These results have shown that the duration of agglutinins following immunization or infection is extremely variable. In some cases, they may persist in fairly high titers for years; in other cases they may disappear within a few months.

Anamnestic reactions have been observed frequently. Immunized persons, whose sera had previously not agglutinated any antigens, have subsequently shown agglutinins in fairly high titers in illness other than enteric infections. The agglutinin titer usually dropped rapidly with recovery.

When this investigation was begun, we hoped that we might be able to establish some arbitrary titer which might be considered as diagnostic for enteric infections. Such a diagnostic titer has been widely discussed, and excellent accounts are given by Havens<sup>5</sup> Topley and Wilson<sup>2</sup>, and Hac, Flynn and Perry<sup>8</sup>.

In cases of enteric infections which have been clinically and bacteriologically diagnosed, we have noted wide variations in the production of agglutinins. In some cases, only "H" or "O" agglutinins are produced. We have noted a relatively high incidence of "O" agglutinins among immunized individuals. We have noted "H", "O", and "H and O" agglutinins in rather high titers as anamnestic reactions in immunized persons, and also as presumably non-specific reactions in persons with no history of infection or immunization.

Since less than five per cent of the sera examined gave any agglutination, and since a large percentage of these gave histories of immunization or of infection, it seems that the incidence of natural agglutinins is quite low. Consequently, we feel that (under conditions in southern Arizona) agglutination with any antigen at any titer may be considered as significant when there is no history of immunization, and when clinical symptoms suggest enteric or *brucella* infection. In cases which are not clinically typical, anamnestic or non-specific reactions may be eliminated only by demonstrating a rise in titer, by means of a series of specimens, or by isolation of the causative organism.

### CONCLUSION

In a series of 10,000 blood specimens, 485 (4.85%) agglutinated one or more of the following antigens: Typhoid H, Typhoid O, Paratyphoid A, Paratyphoid B, *Brucella abortus*.

The incidence of agglutinins for typhoid or paratyphoid in persons with no history of immunization or infection is estimated at 1%.

In this series of 10,000 specimens, 27 (0.27%) contained agglutinins for *Brucella abortus*. Seventeen of these had been clinically diagnosed.

The occurrence of anamnestic and non-specific reactions is discussed.

It is suggested that, under Arizona conditions, agglutination with any antigen, in any titer, may be considered significant when clinical symptoms are suggestions of enteric or *Brucella* infection, and when there is no history of immunization.

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## Carcinoma of the Anus, Rectum and Recto-Sigmoid

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CANCER of the rectum takes a toll of about 35,000 lives in the United States each year. Although it occurs more often between the ages of 50 and 70, it also affects younger people, cases having been reported as early as four years of age. In the group of almost 500 patients examined, I found 14 to be below 30 years of age, and 36 to be between 30 and 40, a total of 50, or 10%, occurring in the span of life in which cancer is the most fatal.

As is customary in all papers dealing with this subject, I wish to make the plea for the education of the patient and the physician in the early recognition of this condition, that these cases may be treated when there is still the chance for cure. The only way that cancer of the rectum and recto-sigmoid may be eradicated, in the light of our present knowledge, will be through periodic examinations, and the destruction by the electric cautery of every adenoma or polyp, no matter how small or innocent in appearance it may be. When the classical symptoms of bowel frequency, with blood, pus and mucus, loss of weight and anemia, abdominal pain and distention, are noted by the patient, the disease is usually well advanced. Bleeding, which is the most important finding in any rectal condition, may come from hemorrhoids, fissure, polyp, parasitic infection, ulcerative proctitis or colitis. The examination with the finger and the proctoscope should never be omitted, even though parasites are found in the stool, or a fissure or hemorrhoids are demonstrated by anoscopic examination. The barium enema should be withheld until after the proper sigmoidoscopic examination has been made. A biopsy of suspected tissue should be taken in all cases. The old idea that the removal of tissue might spread cancer cells is unfounded. Grading of the specimen by the pathologist is only one finding which must be correlated with all the others. It is generally accepted that the higher the grade, the more malignant, and the less chance of cure, and also the more sensitive to irradiation. In primary cancer, the mucosa is always involved. Cancer grows either into the lumen of the bowel, as in the papillary and polypoid types, or into the wall of the bowel, as in the ulcerative types. The growth is practically always hard, distinctly outlined, rough, and ordinarily bleeds easily. It may entirely surround the bowel as in the annular type, or may be restricted to a local area of the bowel surface. Primary cancer must be distinguished from ulcerative lesions as: infections from parasites, ulcerative colitis, and lympho-granuloma inguinale; from secondary involvement by implants from malignant

lesions higher in the abdominal cavity as: cancer of the stomach, pancreas, or ovary; from extension from cancer of the prostate; from proctitis due to the effect of radium and x-ray in the treatment of cancer of the uterus and cervix; from inflammatory nodules; endometrioma; and benign growths.

### TREATMENT

In the consideration of the treatment, we must keep in mind that the fundamental reason for treatment is the cure of the disease, or the prolongation of life, with the least possible temporary or permanent impairment of bodily function of the patient. The selection of the type of treatment depends upon the physical condition of the patient, the location and characteristics of the tumor, and the presence or absence of metastases. The surgeon who attempts to use one procedure in all cases will either have a high mortality rate, a high recurrence rate, or a low operability rate. The procedure selected must be suited to each individual patient after careful evaluation of clinical and pathological findings. The most we can promise any patient with cancer of the rectum, is that there is a reasonable chance that life will be continued with the minimum amount of disability and discomfort.

Metastases occur by cancer cells being carried through the venous and lymphatic circulations. We are more concerned with the lymphatic circulation when we select the method of treatment. If we do not remove the growth and the lymphatic structures which are above it, we are very prone to have a continuation of the disease. Considering the most complete removal of all lymphatic structures as a criterion, the abdominoperineal resection offers the best chance for cure. This procedure may be done in either one or two-stages, depending upon the condition of the patient and the experience of the operator. The two-stage is the safest, but it entails more surgery and more hospitalization.

The procedure which offers the next best chance for cure, because it removes somewhat less of the gland bearing tissue than the abdominoperineal, is the colostomy and perineal resection. This method is excellent in poor risks with low tumors. I feel that any growth, above which the finger can not reach, is not suitable for this operation and that some form of the abdominal type, the condition of the patient permitting, should be used. The mortality rate in ordinary cases is lower, but the recurrence rate is supposed to be somewhat higher than in the abdominoperineal operation.

The third preference would be the colostomy and perineal excision, which means that the bowel is severed below the peritoneal reflexion. This may

Read before The Fourth Harlow Brooks Memorial Navajo Clinical Conference held at Sage Memorial Hospital, Ganado, Arizona, August 28-29-30, 1939.



also be performed without colostomy, and is not to be considered rightly as a radical procedure but more as a local resection. Recurrence rate is much higher than in the other procedures. Local excision should be classed only as a palliative procedure.

It is now the consensus that even in the presence of moderate glandular and liver metastases, the tumor itself should be removed, in order that the patient be made more comfortable, and the spread of the disease be retarded.

In treating skin cancers, or the epidermoid type in the anus or lower rectum, I favor the use of radium, deep x-ray therapy, and surgical excision. Our results with surgery alone have not been gratifying. A temporary or permanent colostomy is usually necessary. In the adenocarcinomas, we feel that x-ray and radium therapy are to be used only in those cases deemed inoperable, either from the condition of the tumor, or the condition of the patient. We are all aware that some cases are reported as having been cured by these methods, but we should not consider them justifiable in the average operable case.

#### CARE OF PATIENT

Whatever surgical method we pursue, or technique we use, we must pay strict attention to pre-operative and post-operative care. The patient should not be operated, ordinarily, with less than a week's hospital care; the bowel should be decompressed by oil and saline laxatives and enemas. If the blood picture is low, transfusions are indicated; the function of the kidneys and heart and

blood vessels must be determined by the proper examinations. The strength of the patient must be kept up by high caloric, high carbohydrate and low residue diet.

Post-operative care must be meticulous in that the patient must be watched for signs of shock and hemorrhage. The blood pressure should be taken at frequent intervals, and if below normal, should be stimulated by the use of ephedrine in suitable doses. Oxygen should be used, especially if there is a rapid pulse, and a blood transfusion should be given immediately following any radical procedure. Intestinal drainage should be instituted by the nasal tube when there is the slightest upper abdominal distension or nausea. The bowel should be opened in 24 to 48 hours, and if there are no contra-indications, fluid and food should be started early. The fluid balance is kept up by the intravenous use of glucose.

Complications to anticipate are: peritonitis, gastric dilatation, paralytic ileus, mechanical obstruction, embolism, pneumonia, and post-operative hemorrhage.

#### SUMMARY

1. Only by proper and frequent examinations will cancer of this region be controlled.
2. The choice of procedure must be chosen for each individual patient, depending upon the clinical and laboratory findings.
3. We must be conservative regarding life, but boldly aggressive in attempting the cure of cancer.

1930 Wilshire Blvd.

## Tuberculosis of the Spine

M. G. ROSENBAUM, M.D.

*Albuquerque, New Mexico*

**T**UBERCULOSIS of the spine is so important a condition, because of its protracted course and serious complications, that a review of the outstanding facts concerning the disease is not out of place.

Vertebral tuberculosis is essentially a disease of childhood; often it occurs where the family history is one of tuberculosis.

The part of the spine most frequently involved is the lower thoracic and upper lumbar spine; but other regions are susceptible. More than one lesion may be present. The body of the vertebra is usually involved, but the infection may originate in any part. The marrow is infected and destroyed; with growth of the tubercle, adjacent bony lamellae are rarefied and disappear. Central caseation occurs, with collapse of the weight-bearing structures; an angular deformity, the gibbus, results. Caseous material escapes about the vertebra

to form a "cold" abscess; it may remain localized by the spinal ligaments, or disseminate along various fascial planes, to make its appearance at considerable distance from its origin. Pressure on the spinal cord may result from abscess, angulation of the bony canal, and from ingrowing granulations, producing disturbances of reflexes, sensation, and motor function.

Bony fusion is nature's response to limit the infection—this may occur between the posterior articular parts of the vertebrae, but usually about the involved bodies. In adults, fibrous walling off of the involved area often occurs. Absorption of tuberculous debris with later calcification and new-bone formation occurs.

Local symptoms may be elicited before definite destruction appears in the x-ray. Pain, muscle spasm, night cries, spasticity on walking, deformity and abscess formation—one or more may be the clew. The x-ray confirms the clinical diagnosis, shows the extent of the disease, presence of abscess, and any evidence of healing that may be

"Statistics On The Fusion Operation In Tuberculosis Of The Spine", 1937-38 Seminar Notes of the Department of Orthopedic Surgery, The State University of Iowa, by permission of Dr. Arthur Steindler.

present. As in so many orthopedic conditions, an early diagnosis is important for the most effective treatment. Of the laboratory procedures the intra dermal tuberculin test is most important.

The treatment of this condition is prolonged and often extensive. The usual anti-tubercular measures, such as good diet, improved hygiene, fresh air and sunlight, are highly essential. The object of local treatment is to secure immobilization of the affected region of the spine and so to permit nature to heal the condition. The details of treatment depend partly on the conditions of each case—the presence of gibbus, abscess, fistula, or paralysis. In an uncomplicated case, complete recumbency is instituted from the start; the patient is placed on a plaster bed or on a curved frame, and restraints are used when necessary. This stage of treatment lasts from 1½ months to 2 years, when the patient may be permitted up, provided certain criteria are met: (1) freedom from pain and tenderness locally, (2) good general condition, (3) no increase in kyphosis, (4) a normal temperature, (5) gaining of weight, and (6) healing seen in the x-ray.

Spinal tuberculosis is a slow and extremely chronic disease, and the treatment must not be hurried, to be effective and reasonably certain. Each patient requires careful supervision, lest a recrudescence occur. It is better to err in prolonging the treatment, rather than by default of precautions. Consolidation of the collapsed bodies may take 3 or 4 years; the x-ray is the important deciding factor. Gradually support is removed—first for short period each day, later for longer periods. The patient is watched for return of pain or increase in the degree of deformity.

Traction is often used in disease of the cervical and upper thoracic spine; during the recumbent period this is applied to the head by halter and weights. Round shoulders or short neck may be the sequelae; paralysis may occur. In the lumbar spine healing occurs quicker, and more control of deformity is possible; abscess formation may cause spasm and contracture.

Abscess formation is the most frequent complication of Pott's disease and may cause pressure symptoms or appear as a tumor. It consists of liquefied debris, with a wall of granulation tissue about; the fluid is sterile unless secondarily infected. At any stage, the abscess may absorb or calcify. It often migrates along fascial planes, blood vessels and nerves. In the retropharyngeal space, abscesses should be evacuated from the neck, to avoid rupture into the pharynx. In the thoracic region, operative interference is difficult, but fortunately rarely required; resection of a transverse process and rib gives the approach. In the lumbar region, aspiration may be necessary.

Paralysis requires absolute recumbency combined with traction or hyperextension; this may be sufficient in mild cases. But where conservative measures fail, laminectomy must be considered; fusion may be done at the same time.

Deformity is often difficult to prevent; and, once established, hard to correct. Only gradual methods can be considered as free from danger; certainly manipulations are to be condemned. The patient may be placed in hyperextension, on a Bradford frame or plaster bed.

Operative fusion of the spine is favored as the best means to control deformity, and to permit quicker and permanent healing. The various operations will produce solid fusion, thus putting at complete rest involved areas—which no external splinting can accomplish. The patient should be under observation, so that before operation he is in good condition, and is either holding his own, or improving. Operation should be avoided in the presence of secondary infection with high fever. After the operation, the spine must be immobilized at least 6 months in a recumbent position.

#### CASE STUDIES

An analysis of 100 attempted spinal fusions for tuberculosis of the spine\* at the Crippled Children's Hospital, Iowa City, Iowa, was made in an attempt to answer several questions.

Does the operation really fuse the spine? In 87 cases in which the end result was stated, solid fusion occurred in 84 (94%). The Hibbs and Albee technique, and modifications of these, were used with equal success.

Does fusion control the deformity in tuberculosis of the spine? In 73 cases presenting deformity, this deformity either decreased or came to a standstill in 70 cases (96%).

Does fusion relieve paraplegia? Paraplegia was relieved, or its progress arrested, following fusion in 10 out of 13 cases (76%). Fusion was preceded by traction in recumbency.

Does fusion heal abscess or sinus? In 89% of 39 cases with these complications, a good effect was obtained; abscesses disappeared or calcified, and sinuses cleared up. With the healing of the tuberculous process, abscess and sinus disappear.

Does the age of the patient influence fusion? Evidently not, since each age group (by decades) seemed to have roughly equally good results. However, in the 14 patients over 40 years of age, the highest percentage of good results was obtained (93%).

Does fusion shorten the time of treatment? The average period of recumbency before operation was about 11 months; after operation about 6 months. The average period of ambulant treatment, when the patient was permitted to sit or walk with strong support, was 23 months. Since non-operative treatment usually requires about three or four years of recumbency, and about two years of ambulant care, there is a definite saving in time by fusing the spine. The saving of time may not be important; the obtaining of solid bony fusion is, since this is the only way absolute immobilization can be assured to the involved vertebrae. Non-operative treatment may result in incomplete or fibrous healing, which may subsequently break down under physical activity.



When should fusion be done? It was found that fusion attempted on a patient whose general condition was progressively getting worse always resulted disastrously. Where the general condition had remained at a constant level, or was improving, the value of the operation became decidedly greater. Cases to be fused, then, should be selected only after careful study over a long period of time—it is not enough that the patient be able to withstand a major operation. If the patient's body is not able to handle the tuberculosis infec-

tion already present, operation is contraindicated; it introduces such risks as operative shock, secondary infection, and sinus formation. It is not a last desperate therapeutic procedure.

#### SUMMARY

In carefully selected cases, operative fusion for tuberculosis of the spine shortens the period of treatment, controls deformity, abscess, and sinus; and offers protection against cord compression.

First National Bank Bldg.

## Relapsing Fever

KENT H. THAYER, M. D.

Phoenix, Arizona

RELAPSING fever is an ancient disease. Hippocrates described it as remittent malarial fever. However, no definite observations were made until 1744, when an epidemic occurred in Ireland. Since then it has occurred almost all over the world. There have been epidemics in Ireland, Scotland, England, Russia and Germany. During the World War there was quite an epidemic in Serbia. Carter Van Dyke, in 1878, described the spirillum in the blood of relapsing fever patients. This disease was not known in North America until 1844, when some cases were reported in Philadelphia, occurring in immigrants from Ireland. Later, in New York and Buffalo, epidemics occurred among people from Ireland. In 1857 Livingston reported a peculiar type of relapsing fever in Africa, which often followed the bite of a tick. It was called tick fever, and spread along the trade routes from Africa to Asia. In 1874 an epidemic among Chinese laborers in California was reported. These previous cases in the U. S. had all been in immigrants who had contracted the disease before arriving in the U. S. There was no endemic focus in the U. S. until 1915, when Dr. Meader reported five cases coming from Bear Creek Canyon in Colorado. He believed this disease had been brought to this particular region by a band of gypsies.

In 1918 Waring<sup>14</sup> reported another case in a twelve year old boy, occurring in the same region. In 1922 Briggs<sup>3</sup> of San Francisco reported that in August, 1921, he had two patients who contracted the disease in Polaris, California. These two patients each noticed a little blood spot on the sheet, and some urticarial spots on the legs from some insect bite. Early in May, 1925, Dr. R. O. Raymond<sup>11</sup> of Flagstaff, Arizona, had under observation a patient that was diagnosed as relapsing fever by the Pathological Laboratory in Phoenix and confirmed by the Hygienic Laboratories in Washington, D. C. This patient obtained the infection in northern Arizona, presumably near Greer, Arizona. The first case reported in Texas was in 1927. In 1930<sup>12</sup> first proof of relapsing fever was found

in Smith Valley, Nevada. Since that time thirty known cases have been found. In 1930 Dr. Bannister<sup>2</sup> of Phoenix, Arizona reported a case of relapsing fever in a man who had contracted the infection around Greer, Arizona. In 1931 Graham<sup>7</sup> reported four cases occurring in central Texas. These occurred in four boys who had gone exploring a cave infested by ticks. This cave, called the Blue Bug Cave, had a bad reputation because people who entered became mysteriously ill. This had been known for at least ten years, and Graham<sup>7</sup> was able to obtain information of about forty cases of relapsing fever coming from that locality. In 1932 Varden<sup>13</sup> of San Bernardino, California reported the disease in a five year old child, contracted in Big Bear Valley in California. In 1933 Legge<sup>9</sup> of Berkeley reported the disease in a medical entomologist who had been employed by the California State Board of Health to make a survey of certain ticks found on rodents. This man sustained a scratch on the right thumb and a raw area on his hand from a burn. While handling a freshly killed squirrel he contaminated the wounds. Eight days later he developed the disease. Blood smear from the squirrel was found positive for spirochetes.

In 1935 Gillespie<sup>6</sup> reported two cases of relapsing fever occurring in Texas. In his article he states that data had been recorded on 258 cases occurring in Texas in the previous five years. After the appearance of an epidemic around Gold Park, Nevada<sup>12</sup> in 1935, at which time eleven persons developed the illness, natives said that there had been a similar malady fifteen years before, affecting numerous persons, and several had died. In 1936, Burns<sup>4</sup> of Walnut Park, California reported a boy seven years old, (his own son) who contracted the disease at Big Bear Lake. In 1938 Dr. Irvine<sup>8</sup> of Tempe, Arizona, had a patient who contracted relapsing fever near Greer, Arizona.

#### ETIOLOGY

The cause of relapsing fever is a spirochete the genus *Borrelia* which produces septicemic man. There are no particular morphological differences in the different species of spirochetes

Read before the Maricopa County Medical Society, February 5, 1940.

on the basis of serological studies, several different species have been isolated. In America it is known as *Borrelia Novyi*.

#### MODE OF TRANSMISSION

In the southwestern part of the U. S. the disease is carried from the reservoir hosts by the ticks of the genus *Ornithodoros*. After the insect has bitten an infected animal, the spirochetes disappear from its alimentary tract, and in six or seven days are found in all the body tissues. This tick, once infected, will transmit the disease to its offspring, so the egg, larval, nymphal and adult forms are all infected. Probably, from clinical evidence, the least dangerous, since its presence on the human body is noticed, is the adult form, while the nymphal forms may obtain blood without causing any disturbance to man. This fact may be the reason why so few cases remember an insect bite. Feces from the insect are scratched into the wound from which the blood meal was obtained, and the spirochete enters the human body.

It<sup>12</sup> has been found that many animals are able to harbor the infection; notably the monkey, opossum, armadillo, calf, horse, cat, chipmunk, ground squirrel, chicken, dog, rat, and tamarack squirrel. Muhlens and Grothusen have found that children and adults may act as carriers, and that spirochetes have been found in the blood stream of symptomless patients as long as ninety-eight days after finding a positive smear. The incidence of the disease is greater among males, probably due to greater exposure, but no age group is immune. Most infections occur during the summer months, when the rodents make their appearance.

#### SYMPTOMS AND SIGNS

Incubation period varies from six to nine days. The patient suddenly becomes acutely ill, although there may be a prodromal period of general malaise. The onset is abrupt, with high fever. The patient may have chills and intense headache, severe aching in the back, arms and legs. Very frequently early in the disease there is nausea and vomiting. The temperature may go up to 104° or 105°. This febrile period may last from two to five days. The temperature usually gradually diminishes somewhat during these days, then suddenly drops by crisis. There is profuse sweating, and the patient feels well except for weakness. During the attack both diarrhea and constipation have been reported. The spleen may become enlarged. With remission the spleen diminishes in size. With a relapse, it increases in size and becomes tender. The afebrile period lasts from two to four, five, or six days, during which time the patient feels quite well. Another relapse may occur with sudden onset as before. In medical books Cecil<sup>5</sup> and Meakins<sup>10</sup> report that many cases terminate with one relapse. A few go through three relapses. More than that is rare. However, in the literature reviewed, this does not seem to be true, since patients are reported as having as many as ten relapses. The patient reported by Waring<sup>14</sup> was not treated spe-

cifically, and had five bouts of fever, terminating in recovery after the temperature had gone to 110.8°. During the onset of the disease, a rash may be found, but this is an inconstant finding. It is of a macular type, appearing on the trunk and extremities, and usually lasts about one or two days and does not recur with subsequent relapses. The face is flushed, and the skin is hot and dry. There is a mild conjunctivitis, and the tongue is coated. The liver and spleen may become enlarged during the relapses, and although this is common, it does not necessarily have to occur. Jaundice is uncommon. There may be an associated bronchial cough which disappears with the fever. Urinary retention may occur. The pulse is stated to be rapid in most of the cases, although in several cases reported, the pulse was slow in the initial stage of the disease. With the relapses it goes to between 100 and 130. The white count may be low, normal, or high. There may be a relative increase in lymphocytes during each relapse. The urine shows findings consistent with fever: albumin and casts. Reynolds<sup>12</sup> reports that the Wassermann reaction is positive in 20% to 50% of these cases, but becomes negative with the disappearance of the disease. After recovery from the infection there is usually considerable weakness. However, other sequelae have been reported<sup>12</sup>, such as hemorrhagic nephritis, iritis, cranial nerve paralysis, meningitis, pneumonia, polyarthritis and parotitis. Abortion has occurred in pregnant women. Gillespie<sup>6</sup> reports hemorrhagic nephritis and iritis, and radiculitis of the third, fourth, and fifth lumbar roots, in one of his patients. These all cleared up on recovery from the disease.

#### DIAGNOSIS

This disease is suggestive of several other conditions that must be ruled out: typhoid, undulant fever, malaria, rat-bite fever, and several others. This can be differentiated only by blood smear. It is important to obtain the blood smear just as the temperature is beginning to rise, either early in the disease or in a relapse, for very frequently during the course of the febrile period nothing can be found in the blood stream, and the blood is practically always devoid of spirochetes during the remission. <sup>1</sup>Evenly smeared blood slides taken as the fever rises during a relapse should be submitted. "They may show more than fifty spirochetes per field or only one in many fields."

#### TREATMENT

Neosarsphenamin is specific, and it is important to give this drug during the febrile period, preferably just as the temperature is beginning to rise during one of the relapses. Quite often one dose of .3 gram of Neosarsphenamin is enough to check an attack if given at this time. However, Graham<sup>7</sup> reports one of his patients relapsing after a ten-day interval following intravenous Neosarsphenamin. He was given .6 gram, and fourteen days later relapsed again. More treatment was given; he was free from symptoms for twenty-one days,



# *Program*



## 1940 ANNUAL SESSION New Mexico Medical Society Albuquerque, May 27, 28, 29



REGISTRATION FEE - \$5.00

Fee Includes Two Mid-Day Luncheons, May 27 and 28;  
Dinner-Dance May 28, and Smoker May 27

HEADQUARTERS - HILTON HOTEL

## OFFICIAL PROGRAM

### NEW MEXICO MEDICAL SOCIETY

May 27-29, 1940

#### MONDAY, MAY 27

##### Morning Session

9:00 A. M.

House of Delegates

Registration

Exhibits

10:00 A. M.

Invocation ..... Dean Douglas Matthews  
Address of Welcome ..... Mayor Clyde Tingley  
Response ..... H. T. Colvard, M. D.  
President's Address ..... W. B. Cantrell, M. D.

1. "Tumors of the Lung" .....  
..... Carl Maynard, M. D., Pueblo, Colo.  
Discussion ..... Willis W. Waite, El Paso, Texas
2. "Treatment of Acute Fractures of the Neck of the Femur".....Willis C. Campbell, M. D., Memphis, Tenn.  
Discussion..Frank Goodwin, M. D., El Paso, Texas

12:00 M.

3. "Medical Economics," Luncheon Address .....  
..... Frederick S. Wetherell, M. D., Syracuse, N. Y.

2:00 P. M.

1. "Renal Tuberculosis" .....  
J. L. Emmett, M. D., Mayo Clinic, Richester, Minn.  
Discussion..Wm. H. Woolston, M. D., Albuquerque
2. "Present Status of the Treatment of Urinary Infections" ..... Ben D. Massey, M. D., Pasadena, Calif.  
Discussion ..... A. W. Multhauf, El Paso, Texas
3. Sterilization Procedures on Women" .....  
..... E. M. Lazard, M. D., Los Angeles, Calif.  
Discussion ..... L. M. Miles, M. D., Albuquerque
4. "The Role of the General Practitioner in the Curing of Cancer".....Frederick S. Wetherell, M.D., Syracuse, N.Y.  
Discussion..E. A. Campbell, M. D., Gallup, N. M.
5. "Further Notes on Clinical Aspect of Ultra-Short Wave Length X-Rays" .....  
..... Albert Soiland, M. D., Los Angeles, Calif.  
Discussion ..... M. P. Beam, M. D., Albuquerque

##### EVENING SMOKER

MAY 28

9:30 A. M.

1. "Un-united Fractures of the Neck of the Femur" .....  
..... Willis C. Campbell, M. D., Memphis, Tenn.  
Discussion ..... Louis Breck, M. D., El Paso, Texas

2. "Head Injuries" .... J. R. Jaeger, M. D., Denver, Colo.
3. "Frequency of Spinal Cord Tumors and Their Diagnosis" .....  
.....Paul M. Bassel, M. D., Scott White, Temple, Texas
4. "Low Back Pain and Sciatica as Related to Mechanical Causes of a Neurogenic Nature" .....  
..... Rupert B. Raney, M. D., Los Angeles, Calif.  
Discussion of Papers 2, 3 and 4 .....  
..... D. F. Monaco, M. D., Gallup, N. M.

12:00 M.

Luncheon Addresses .... R. M. Balyeat, M. D., Oklahoma City, Okla., and Albert Soiland, M. D., Los Angeles

2:30 P. M.

1. "Vagohypotonic Individual and a Description of a Cardiac Function Test" .....  
..... Dan G. Stine, M. D., Columbia, Mo.  
Discussion. Ralph Mendelson, M. D., Albuquerque
2. "Skin Diseases, Diagnosis and Treatment" .....  
..... Richard L. Sutton, Jr., M. D., Kansas City, Mo.  
Questions.
3. "Diagnosis and Treatment of the Common Allergic Manifestations as Seen by the General Practitioner" .....  
..... Ray M. Balyeat, M. D., Oklahoma City, Okla.  
Discussion....Walter I. Werner, M.D., Albuquerque
4. "Gastric Surgery" .....  
..... Verne C. Hunt, M. D., Los Angeles, Calif.  
Discussion .... P. L. Travers, M. D., Gallup, N. M.
5. "Clinical and Gastroscopic Studies of Interest in the Diagnosis and Treatment of Peptic Ulcer" .....  
..... A. L. Levin, M. D., New Orleans, La.

##### EVENING SMOKER

- Travelogue, "An Arctic Safari" .....  
..... Richard L. Sutton, Jr., M. D., Kansas City, Mo.
- Travelogue, Title to Be Supplied .....  
..... J. R. Jaeger, M. D., Denver, Colo.

MAY 29

1. "Gastrosocopy" ..... C. N. Giere, M. D., El Paso, Texas  
Questions.
2. "Infection of the Head and Neck" .....  
..... George J. Pattee, M. D., Denver, Colo.  
Discussion .... H. L. Brehmer, M. D., Albuquerque
3. Title to Be Supplied .....  
..... Paul J. Conner, M. D., Denver, Colo.  
Questions.
4. "Clinical Significance of Abdominal Pain in Children" .....  
..... W. W. Barber, M. D., Denver, Colo.  
Discussion .... Albert S. Lathrop, Santa Fe, N. M.
5. "Coccidioides Infection of the Lungs" .....  
..... O. J. Farness, M. D., Tucson, Ariz.  
Discussion ..... L. S. Peters, M. D., Albuquerque



## COMMERCIAL EXHIBITORS

1. A. S. Aloes & Company, Los Angeles, Calif.  
Surgical supplies.
2. Geo. Berbert & Sons, Denver, Colo.  
Surgical supplies.
3. Davis & Geck, Brooklyn, N. Y.  
Sterile surgical sutures.
4. J. Durbin Surgical Supply Co., Denver, Colo.  
Surgical supplies.
5. G. H. Fisher & Company, Chicago, Ill.  
X-ray and electrotherapy equipment.
6. General Electric X-ray Corporation, Chicago, Ill.  
X-ray and deep therapy.
7. Holland-Rantos Co., Inc., New York, N. Y.  
Gynecological specialties.
8. Lederle Laboratories, Inc., New York, N. Y.  
Pharmaceuticals and biologicals.
9. Mead Johnson & Company of California, Los Angeles, Calif.  
Food products.
10. C. V. Mosby & Company, St. Louis, Mo.  
Medical publishers.
11. Phillip Morris & Company, New York, N. Y.  
Tobacco.
12. Southwestern Surgical Supply Co., El Paso, Texas.  
Surgical supplies.

## SCIENTIFIC EXHIBITORS

1. Dr. J. R. Jaeger, M. D., F. A. C. S., F. I. C. S., Clinical Professor of Surgery at University of Denver, in charge of Neurosurgery.  
Will show moving pictures of brain and neurosurgical operations; films will be shown as indicated in the program.
2. Dr. Albert Soiland, M. D., D. M. R. E., F. A. C. R., F. A. C. P., from Los Angeles, Calif.  
Will demonstrate deep therapy treatment methods.
3. Dr. Ray M. Balyeat, M. A., M. D., F. A. C. P., Director of the Balyeat-Bowen Hay Fever and Asthma Clinic, Oklahoma City, Okla.  
Will show common causes of hay fever and treatment methods.
4. Dr. A. C. Scott, Sr., M. D., F. A. C. S., Surgical Director of Scott and White Clinic, Temple, Texas.  
Will demonstrate diagnosis of breast tumor and breast amputation with a hot knife.
5. Dr. Louis W. Breck, M. D., and Dr. Eugene W. Secord, El Paso, Texas.  
Orthopaedic exhibit.
6. Carrie Tingley Hospital, Hot Springs, N. M. Dr. George C. Hansel, Chief Surgeon.
7. United States Indian Service. Dr. Stella Werner, District Medical Director.
8. New Mexico State Public Health Laboratory. Miss Myrtle Greenfield, Director.  
New methods in laboratory diagnosis.

## OFFICERS

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W. B. Cantrell, M. D. ....	Gallup
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Wallace Martin, M. D. ....	Clovis
Vice-President	
L. B. Cohenour, M. D. ....	Albuquerque
Secretary-Treasurer	

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Dr. M. P. Beam, Chairman  
Dr. Hugh L. Bass  
Dr. Richard M. Riley  
Dr. M. G. Rosenbaum

## HOTELS

Headquarters—Hilton Hotel.

Other Hotels—El Fidel, Alvarado and Franciscan.

Rates range from \$2.00 to \$4.00, single with bath; \$2.75 to \$5.00, double with bath; \$4.00 to \$5.00, double with twin beds.

## **ALBUQUERQUE**

### **The Convention City**

**Albuquerque, N. M.**—One of the nation's fastest growing cities. Population 50,000 within metropolitan area. Altitude 5,000 feet. Delightful year-round climate. Business center of state. Regional center for government agencies. Splendid school system. Home of University of New Mexico. Served by Santa Fe Railway, TWA Air Lines, Continental Air Lines, Greyhound and Santa Fe Trail buses. At crossroads of U. S. Highways 66 and 85.

**U. S. Veterans' Hospital**—Located in Albuquerque because of ideal climate and general advantages. Of distinctive Spanish-Pueblo design. Constructed at a cost of \$1,250,000. Houses 259 patients and a personnel of 250.

**Volcanoes** — The three conical peaks that show against the skyline across the Rio Grande to the west of Albuquerque are of volcanic origin. At the base of these peaks are found unique lava flow formations. Off U. S. Highways 66 and 85.

**University of New Mexico**—The atmosphere and architecture of the university reflect the unique character of New Mexico itself. The buildings are all designed in authentic Spanish-Pueblo style, and the campus is beautifully located on a high mesa overlooking the city. The university is co-educational, with a student body of approximately 1,400. It has a high scholastic standing, being fully accredited by the Association of American Universities.

**Historic Old Town**—When Albuquerque was founded in 1705 and New Mexico was still a province of Spain the first adobe houses sprawled about what is now Old Town Plaza. Today interesting reminders of those early days still remain. The mission church of San Felipe de Neri, built soon after the founding of the town, still stands much as originally constructed. The Old Town has attracted an artist's colony of note, with studios open to the public.



and then relapsed, requiring more Neoarsphenamin. Varden's<sup>13</sup> case relapsed, requiring more Neoarsphenamin. Burns'<sup>4</sup> case also relapsed after the initial injection. Irvine's<sup>8</sup> case relapsed after the initial injection. Following the administration of Neoarsphenamin, the temperature gradually subsides in twelve to twenty-four hours and the patient may become somewhat nauseated. When a patient relapses, one feels that he should continue treatment for some time to guard against other relapses. However, this probably has little value, since the most effective means of reaching the spirochetes is when they are in the blood stream, and this is found only during febrile periods.

### CASE REPORT

CASE: E. M. J., Age. 32. This man had always been well. He went to San Francisco to see the World's Fair from June 15th to July 1st, 1939. On July 15th and 16th he went up to the White Mountains, around the vicinity of Greer, fishing, then returned to Phoenix.

He felt very well until July 23, 1939. On that evening he was tired, and did not care about eating. He felt about the same way the next morning; however, he went to work. During the morning he felt cold. The generalized aching began to increase. By two P.M. he had to go home because of aching and fever. On the 25th, his temperature went higher; his aching became more severe, particularly in his head, back, legs, and arms, and he vomited. He felt chilly but had no chill. He had no cough, no cold; he had no sore throat; his bowels were all right; there were no urinary symptoms. He complained only of the aching.

Physical examination at this time revealed: skin to be rather flushed; sclerae were moderately inflamed; nose normal; tongue was coated; throat moderately inflamed. Neck showed no adenopathy and no stiffness. Chest was clear throughout. Heart sounded normal, but the rate was only eighty. Abdomen, liver, and spleen were not palpable, and there was no tenderness. Extremities were perfectly normal; Kernig was negative. Temperature 103.8°. Respirations were easy; not increased.

Blood count: R.B.C. 4,700,000; hemoglobin 95%; W.B.C. 4,000; polynuclears 63%; lymphocytes 33%; monocytes 1%.

Impression: I thought this acted very much like influenza, with a low white count, slow pulse, and high temperature.

He was treated symptomatically. The next day there were still no physical findings. On the 27th, his temperature came down; he felt good. After remaining in bed about three days, he got up, went to work, and felt well until about ten o'clock in the morning, on the second of August, 1939. His temperature started up; he felt tired; he had some aching, but not as severe as before.

Physical examination was negative again except for a pulse of eighty, and temperature of 101.4°. Blood was taken for Widal and undulant fever tests; these were both negative.

On the third of August, his temperature was 103.6°, his pulse 96. Still nothing could be found. A smear was obtained for malaria, and none was found. His temperature dropped on the night of August the third. He was kept in bed, but on August sixth, his temperature went up again. It stayed around 101° during the day, and about three A.M., August seventh, it went up to 105.4°

and then rapidly dropped by crisis. It left him feeling well, except that he was weak. This time his white count had gone up to 10,500 with polynuclears 60%, lymphocytes 27%, and monocytes 13%.

Urine: 1.023; albumin and sugar negative; no casts or blood cells; occasional white blood cell.

This was the third episode of fever. Relapsing fever was considered, and a smear taken on the seventh was examined by the laboratory for spirochetes, but none were found. Patient was kept in bed, feeling very good until about four P.M. August 15, 1939, when his temperature started up. A smear was immediately obtained, submitted to the laboratory for examination, and the spirochetes of relapsing fever were found.

He was given immediately .3 gram of Neoarsphenamin intravenously. That night his temperature went on up to 103°, but came down to normal the next night, when he was again given .3 gram of Neoarsphenamin.

He was given .3 gram of Neoarsphenamin intravenously again on August 20, 1939. Patient felt very well, and was working right along and was considered cured. However, on September 15, 1939, just one month after his first intravenous Neoarsphenamin, he began feeling tired. That evening, he began to ache, felt chilly and his temperature was 101°.

Physical examination was negative again except for the flushed skin, and injection of the sclerae. Some blood was obtained for smear, and the laboratory again found the spirochete of relapsing fever. He was given .3 gram of Neoarsphenamin immediately, and in order to prevent another recurrence, he was given five injections of .3 gram of Neoarsphenamin.

Since bismuth is effective against the spirochete of syphilis and the spirochete of Vincent's, he was given two injections of bismuth in oil, with the idea that this would last over a longer period of time. Up to the present, January 24, 1940, the patient has had no relapse.

### CONCLUSION

Relapsing fever is a disease carried by a tick which transmits the spirochete from infected rodents to man. It has been found endemic in Texas, California, Colorado, and Nevada. Three cases have been previously reported from Arizona. Including the case presented here, four patients have been infected in the White Mountains near Greer, Arizona. Many people vacation in this region during the summers, and it is possible that other cases of relapsing fever have gone unrecognized, only because it has not been considered.

15 E. Monroe

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# Symptomatology and Etiology of Spontaneous Hypoglycemia

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IN view of the widespread interest in spontaneous hypoglycemia since<sup>1</sup> the original investigation of insulin beginning in 1922<sup>2</sup>, the demonstration of true hyperinsulinism due to excess function of islet cell tumors of the pancreas first proved in 1927<sup>3</sup>, the recent detailed studies by the neuropsychiatrists of the manifestations of induced hypoglycemia in the shock treatment of mental disease, and<sup>4</sup> the rather enormous literature on the subject that has accumulated during the past decade, the title selected for this paper may well seem to be repetitious and even superfluous. As a clinical entity, because of its mimicry of so many other better known conditions, spontaneous hypoglycemia is still, no doubt, often overlooked. It is one of the conditions that is demonstrated only when kept in mind and appropriate investigations are undertaken. Although all the minute details of the regulation of carbohydrate metabolism are still not understood, the enthusiastic researches of the past few years have increased our knowledge considerably and we are in a much better position to evaluate this specific problem than we were able to do but a short decade ago, perhaps a further justification for reviewing the subject at this time.

## SYMPTOMS

Since, of all the tissues in the body, the central nervous system is apparently dependent upon carbohydrate predominantly for its metabolic needs, it is not surprising that symptomatically the hypoglycemias express themselves essentially as neuropsychiatric problems. In the initial stages and less severe forms disturbed function of the autonomic nervous system is usually dominant. This is consistent with the belief that the first defense against a failing glucose supply is a heightened activity of the sympathico-adrenal system. Vasomotor disturbances such as pallor, palpitation, a sensation of painful constriction in the chest, sweating, pilomotor activity and a sense of tremulousness suggest the response to an overdose of adrenalin. At other times gastrointestinal symptoms such as hunger, epigastric discomfort or pain, or even vomiting, may be more disturbing and suggestive of the presence of a peptic ulcer.

Again, fatigue, nervousness, sweating, tachycardia and tremor may closely simulate the typical symptoms of hyperthyroidism.

As the blood sugar drops rapidly or reaches unusually low levels there is evidence that the oxygen consumption of the nervous system diminishes very appreciably, indicative of a greatly decreased metabolic activity approaching and simulating very closely the results of anoxemia. Under these conditions the patient may exhibit any conceivable

variety and combination of neurologic and psychiatric disturbances. To attempt to enumerate all the possible variants in psychic or motor misbehavior would be to undertake an endless task. Among the milder manifestations are those seen in certain individuals who become suddenly and unjustifiably tired, exhausted and faint. This acute fatigue state, usually occurring some hours after the taking of food, may be accompanied by varying combinations of tremor, perspiration, palpitation, visual disturbance, muscular incoordination, mental slowness, impaired power of concentration, anxiety, confusion, depression and drowsiness. Again the mood may be quite different with a "sense of lightness", euphoria, volubility, unprovoked laughter, and so forth, suggestive of a happy stage of alcoholic intoxication. At other times the victim may be unreasonably irritable, quarrelsome, combative and negativistic. Paresthetic tingling of the lips, tongue, fingers, or toes are not uncommon early symptoms. Processes of thought and speech may be greatly slowed, or the subject may go about as though dazed and unaware of his surroundings and actions—typical somnambulism. At times these patients may commit acts of destruction or violence even to their dearest friends or relatives. In short, during an attack, they may behave like neurasthenics, hysterics, alcoholics, or like victims of any one of the major psychoses.

Of neurologic manifestations one may observe diplopia, nystagmus, variation in the size and reaction of the pupils, transient weakness or paresis of groups of muscles such as facial weakness or even complete hemiplegia. As the attack progresses there may be muscular twitching, rigidity even to opisthotonos, diminished consciousness from stupor to deep coma, and convulsive seizures, generalized or Jacksonian in type. Headache may be a prominent symptom either early or following an attack. Vomiting is not uncommon. During the more profound seizures there may be marked alteration in the tendon reflexes, and positive Babinski and Oppenheim signs are frequently observed. Sweating may be extreme. The temperature may fall to remarkably low levels while, on the other hand, after an unusually severe and prolonged attack, there may be a hyperpyrexia. If the patient escapes the diagnosis of some functional nervous disorder or a psychosis, he may well be suspected of having epilepsy, encephalitis, a brain tumor, a cerebral vascular lesion or some other form of organic nervous system disease.

## SEQUELLAE OF ATTACKS

The attacks may terminate spontaneously, but are typically relieved by suitable carbohydrate taken either by mouth or intravenously. A more or less total amnesia for the more severe episodes is

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the rule. Unless the attacks are too severe and too closely repeated the patient appears to be quite normal during the intervals between. Following major seizures headache and drowsiness may persist for some time. Persons subject to repeated severe attacks may develop personality changes, becoming depressed, irritable and psychasthenic. There may be progressive mental deterioration. Such manifestations as paralysis, hemianopsia and aphasia usually disappear gradually, but may be prolonged. If the attacks are too severe, too prolonged, or too rapidly recurring, death may ensue and is apparently due to the production of irreversible degenerative changes which have been found to involve varying areas of the cerebral cortex and the basal ganglia. When this process has gone too far no amount of glucose will rescue the unfortunate victim.

The behavior of a patient in the midst of an hypoglycemic attack furnishes the most dramatic evidence of the vital importance to the organism of a steady glucose supply. The demands of the tissues for glucose depend upon their activity or metabolic rate of the moment. Obviously this demand varies greatly from hour to hour. The intake of food is ordinarily intermittent and also variable. Mealtime does not necessarily coincide with the period of greatest need. In spite of these things, under normal conditions the blood sugar varies within relatively narrow limits.

#### REGULATION OF SUGAR LEVEL

The regulators of this remarkable "homeostasis" may be grouped into three main divisions, though their functions are so interwoven that an actual separation is hardly possible. These are the endocrine glands, the autonomic nervous system, and the liver.

Of the endocrines, insulin apparently acts primarily in the conversion of glucose into glycogen in the peripheral tissues, thereby making it available for the production of energy. It also inhibits the too rapid release of glucose from the liver and may be necessary for the synthesis of liver glycogen. Its action, therefore, is to remove glucose from the blood stream and if it is ineffectually opposed the sugar content of the blood tends to drop toward zero. The other endocrines, and especially the adrenals, the thyroid and the pituitary have an opposite effect. The first defense against depletion of the blood's sugar is apparently adrenalin which increases the rate of glucose release from the liver and may actually inhibit temporarily the use of glucose by the peripheral tissues. The early symptoms of the hypoglycemic reaction appear to be due in large part to a sudden adrenalin release. The internal secretion of the adrenal cortex by a different mechanism also opposes the effects of insulin, but seems to be less abrupt and more continuous than adrenalin. An even powerful opponent to insulin is the pituitary. Without the pituitary present animals develop only a very mild diabetes following pancreatectomy, and persistent

injections of a suitable pituitary extract have been shown to produce a typical diabetes with hyperglycemia, glycosuria and ketosis even in the presence of an intact and normal pancreas. Either by their effects on the function of the previously mentioned glands, the gonads and possibly the parathyroids may also influence carbohydrate metabolism.

Correlating the functions of the various endocrines is the autonomic nervous system. From the sugar which is located among the basal ganglia and closely interrelated with the pituitary by innervation and circulation, fibers extend by way of the vagus to the islands of Langerhans, and stimulate them while others over the sympathetic system activate the adrenals and the thyroid. This center is, no doubt, activated itself in one direction or the other by the sugar content of the circulating blood.

The liver is the central organ responsible for carbohydrate regulation. Here absorbed carbohydrate is stored and lactic acid, certain aminoacids and even products of fat metabolism are also converted into glycogen. This stored glycogen is later released as blood glucose, depending upon the needs of the moment. These functions of the liver, glycogenesis, glyconeogenesis, and glycolysis are controlled and regulated by the balanced activities of the endocrines and the autonomic nervous system. Under fasting conditions the liver seems to be the only source of blood glucose.

With this very brief and superficial resume of normal physiology in mind it becomes obvious that variations in the blood sugar content, in either direction, may occur when there are significant alterations in structure or function at any point in the controlling mechanism. In searching for the etiology of hypoglycemic symptoms, therefore, one must bear in mind the numerous possibilities for such a disturbance. For convenience of classification, the following systematic arrangement may be useful.

#### CLASSIFICATION

I. "*Physiologic*" hypoglycemia. It has been repeatedly demonstrated that the rate of utilization or storage of sugar can be stimulated and accelerated by the persistent intake of a relatively high carbohydrate diet. If the blood sugar curve of such an otherwise normal individual is followed for three or more hours after a carbohydrate meal, such as 100 grams of glucose, it is not infrequently found that, following a moderate rise during the first hour, the level may fall to quite a low point—to 70 mg. or less. There may be no reaction noticeable or, at the time of the most rapid drop the subject may complain of hunger, and may experience some faintness, nervousness, palpitation or sweating, and there may be headache. Such symptoms will usually disappear gradually as the blood sugar again rises. Food will give prompt relief. A large percentage of people have, no doubt, experienced such mild symptoms on occasion. They may

be induced also at times by unusually prolonged exercise or by too long a delay in the time of the accustomed meal. This type of hypoglycemia does not tend to become progressive and usually has no serious import. Such observations should remind us, however, that the finding of a moderately low blood sugar alone does not necessarily mean that we have arrived at a diagnosis of a truly pathological condition. The recognition of the stimulating effect of carbohydrate has been of service therapeutically. A goodly number of patients with annoyingly repeated and even severe hypoglycemic reactions have been improved by encouraging them to follow a relatively low carbohydrate and correspondingly higher fat and protein diet.

II. *Hypoglycemia due to lack of opposing secretions.* As previously indicated, the pituitary, the adrenals and the thyroid have, through their hormones, an effect on the blood sugar opposite to that of insulin. Hypersecretion of these organs tends to produce hyperglycemia, while severe degrees of failure have an opposite effect. Destructive lesions of the adrenal cortex, as in Addison's disease, are frequently accompanied by chronic hypoglycemia, and the patient may actually die in hypoglycemic coma. Similar conditions may at times be observed in subjects of pituitary cachexia, Simmond's disease, or following destructive pituitary tumors. Likewise, in association with severe degrees of hypothyroidism the blood sugar may be chronically or periodically low, though severe symptoms attributable to hypoglycemia are apparently less frequent than in association with adrenal or pituitary failure. In this connection it should be remembered that in the presence of hyperthyroidism there may be occasional hypoglycemic periods in contrast to the more usual hyperglycemia if, as a result of continuous overstimulation, the store of liver glycogen should become exhausted. Such a condition has been observed following operations on toxic thyroids with serious consequences.

In this group the low blood sugars often found may be attributed to a relative insulin excess but there is no evidence of any disturbance of structure of the islands of Langerhans. All these patients are highly sensitive to injections of commercial insulin.

III. *Hypoglycemia due to dysfunction of the nervous system.* Since the observations of Claude Bernard it has been recognized that destructive lesions involving structures located in the floor of the third ventricle may cause hyperglycemia and consequently glycosuria. Only within the past few years has the opposite effect been recognized. Vagal overstimulation, as opposed to sympathetic hyperactivity, would appear to be the logical mechanism. A great difficulty in distinguishing cause from effect arises in consideration of this group since, as previously indicated, the symptoms and signs of significant hypoglycemia from whatever cause

are chiefly manifestations of disturbed nervous system function. Early there is evidence of sympathetic over-activity; later, in profound attacks, there may be complete disorganization of autonomic balance with vagal symptoms predominating. Added to these are variable symptoms indicative of cortical damage and evidence of definite involvement of any or all the basal ganglia. Temporary or permanent signs of focal damage, such as aphasia or motor weakness, only serve to confuse the issue. Yet occasional observations of hypoglycemic reactions in association with brain tumors in certain locations, occurring with or producing the "seizures" of general paralysis, following encephalitis, and so forth, would appear to be adequate evidence that irritative lesions in the region of the vagal centers may force the blood sugar down possibly by an overstimulation of insulin production. It has been observed repeatedly that persons with an unstable autonomic nervous system, especially the vagotonic, hypotensive type, are particularly subject to periodic symptoms such as we have attempted to describe, and that these symptoms are associated with a low blood sugar. Furthermore, these individuals may have very low blood sugar curves following the ingestion of glucose. Low carbohydrate diets with shortened intervals between meals and general measures directed to improve their general physical and nervous state have been quite successful therapeutically. It is somewhat an open question as to whether the nervous imbalance predisposes these individuals to periodic or chronic hypoglycemia, or hypoglycemia from some other cause is provocative of their nervous reactions. This group offers a most interesting field for further investigation.

Whether to classify the hypoglycemic symptoms not infrequently observed in some women in association with the menstrual periods in this group or in the previous group of primary endocrine disturbance is difficult to answer at this time. The close integration of endocrine function and the autonomic system may well render an attempted division of this type somewhat superfluous.

IV. *Hepatogenous hypoglycemia.* Animals deprived of their livers die from hypoglycemia unless measures are taken to provide a continuous glucose supply. Clinically, any disease process that seriously interferes with the functions of glycogenesis or glycolysis may deprive the blood stream at times of adequate sugar. This has been observed in various forms of acute hepatitis, infectious or toxic, in extensive carcinomatosis, in extreme fatty infiltration such as may be associated with alcoholism, in advanced cirrhosis and in chronic infectious hepatitis. Von Gierke's or glycogen storage disease is characterized by hepatomegaly and hypoglycemia. In this condition the liver is filled with glycogen, but the process of glycolysis is seriously impaired.

It appears that in the past too little attention has been given to disordered states of liver func-



tion as significant factors in the production of clinically important hypoglycemic manifestations. These same patients may have alternating periods of hyperglycemia and glycosuria simulating and often confused with diabetes.

Other conditions tending to deplete the glycogen stores of the liver may be listed in this category, such as the hypoglycemia of starvation and of prolonged strenuous exercise, as in the classic example of the marathon runners. Physical exertion tends to exaggerate any tendency toward hypoglycemic reactions, whatever the etiologic background.

V. *Hypoglycemia due to island cell tumors of the pancreas (true hyperinsulinism).* Of all the spontaneous hypoglycemias, the most dramatic and the one which has received the most enthusiastic attention is that resulting from an excess insulin production of tumors, malignant or benign, arising from the island cells of the pancreas. Recognized first but 12 years ago, these adenomata have now been reported from most parts of the world. While the early symptoms may be mild and relatively infrequent, they tend to become progressively severe and disabling. On the other hand, the first attacks may be suddenly violent. In the presence of these tumors all methods of conservative management eventually fail. With successful surgical removal a complete cure can be expected. It must be remembered, however, that more than one adenoma may be present. Surgical cure has now been accomplished in a considerable number of instances. Fortunately only a relatively small number of proved tumors have been definitely malignant with evidence of metastases. The possibility of malignancy, however, is one important reason why surgery should not be unduly delayed if one can convince himself that the hypoglycemia is not due to some extra-pancreatic disturbance.

These adenomata are often quite small and difficult to find even after complete mobilization of the pancreas. In two patients whom I have had the opportunity to observe, the small tumors were located in the posterior portion of the pancreas so far toward the duodenal end that they were missed at operation even after careful search. One patient was explored twice, but the tumor was discovered only at autopsy. In third patient the small tumor was easily visible on the anterior surface and was removed with entire relief from symptoms.

In the newborn and young children, especially those of diabetic mothers, a generalized hyperplasia of the islands of Langerhans with hyperinsulinism is occasionally seen. This condition has been but rarely demonstrated in adults.

VI. *Hypoglycemia of unknown etiology.* For the sake of completeness it must be admitted that in some instances, even of severe degrees of hypoglycemia, no satisfactory explanation of the condition has been demonstrated even after meticulous study, surgical exploration, and even subtotal pan-

createctomy. Time will no doubt supply the answer.

#### DIAGNOSTIC CRITERIA

A brief word only about diagnosis: Before we decide upon a diagnosis of spontaneous hypoglycemia or hyperinsulinism, it should be definitely demonstrated that the patient's symptoms coincide with the presence of a low blood sugar, typically 70 mg. or considerably lower, that he can be relieved by glucose or other suitable carbohydrate and that typical symptoms can be precipitated by starvation or by the administration of a small dose of commercial insulin. Numerous observation have been made to indicate that a rapid drop in the blood sugar is more apt to produce a typical reaction than a gradual fall even to low levels. For this reason there is no definite correlation between the actual blood sugar content and either the onset or severity of symptoms. In hypoglycemic coma, however, the blood sugar is likely to be below 45 mg. per 100 cc.

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## MASS MEDICINE?

Laudable is the present day interest of the public in preventive medicine. For years the medical profession has fostered the development of such an interest. Now, with public cooperation, the various health services are showing remarkable statistical improvement in the field of disease prevention. The majority are being well cared for. Further radical improvement may be dependent on departure from today's mass methods.

Educational campaigns, posters, lectures and miscellaneous publicity efforts bring many people into the public health clinics. There they are exposed to advice, admonitions, persuasion. There also they receive mass immunizations. Yet many of these, plus other persons, not clients of the public health service, later become numbers on the wrong side of the health ledger. In other words, too many people still get sick.

Now, here is a field of work for the family doctor, despite the sneers of the self-anointed Hugh Cabot. Nearly any physician, aside from the institutionalized automaton, well knows that, due to something inherent in the individual, certain people seem bound to contract certain diseases, especially herded in masses as targets for usual health measures. And there is the point of this discussion—the individualism of human beings in their response to environment. We note that certain cases, say of tuberculosis, get well easier and faster than other cases whose objective findings may be identical with those of the first group. Then we say

"strong constitution." We have seen certain children in a family contracting poliomyelitis, while their brothers and sisters remain well. Then we say "immunity." Everyone is aware that nervous make-up and mentality are greatly concerned in any case of organic pathology, and the response of the entire organism to that pathology. Prescribers beware of idiosyncrasies to various drugs.

The prevention and treatment of disease in the individual must forever remain a peculiarly individual, highly personalized problem. The solution does not lend itself to mass methods, if a thorough, complete, honest solution is to be obtained. Mass methods are like a pint of strawberries for a regiment—fine as far as they go. Then must enter personal, individual attention by the family doctor to the individual being. He must see his patients in four categories: (1) morphological (2) physiological (3) immunological (4) psychological. He must know how his patient's body is shaped, how it works, how it resists infections, how it thinks and feels. Knowing these things, he is in position to advise, to prevent or treat disease. And who can be in better position.

Human beings cannot yet be treated as numbers of interesting cases of this or that. They must be seen and cared for as highly organized, complex individuals. Medicine still needs the family doctor. More, the public needs him. No one else can do the job—least of all the belligerent, prejudiced advocate of mass medicine for the masses.

## WAR AND MEDICINE

Wilder Penfield, addressing the McGill Medical Undergraduate Society, has this to say:

"The sound of marching feet across the Polish frontier changed the world in which we live. For every man war is a different thing. It is one thing for us in Canada and another for the man in Poland, in England, in Germany. It is one thing for a man in civil life and another for a man in medicine. What does this war mean to a medical student?

I may as well admit at once that I was a medical student when the last war broke out and that gives me a measure of understanding of your dilemma at this time. You have probably had the impulse to throw down books and test tubes and march in a combatant company, but you must first stop to consider the need for medical men in this crisis. We who have our training are ready and will go into the Army Medical Corps when needed. But you, too, will be needed as doctors before this affair is over.

Perhaps in the mirror of history you can see yourselves in a truer perspective against the background of this war. 'History', Macphail said, 'is the master to whom we all must go.' Advances in medical science have done much to change the face of warfare. Until recently contagious disease was wont to follow each army about, destroying more men from behind than the enemy could kill from in



front. Now, however, typhoid fever, smallpox, typhus, malaria, and to a large extent even syphilis have surrendered to inoculation, vaccination, delousing, sanitation and prophylaxis. The problem of more rapid and efficient handling of the wounded remains to be solved with a thousand other lesser problems to which only the fully trained medical man can contribute.

If this war continues now, which God forbid, I have tried to point out that Canada can ill afford to allow her medical schools to decrease the normal supply of doctors nor to lower their standards of instruction. You have received cards on which to signify to Ottawa your willingness to serve wherever you may be needed. I have no doubt your signatures were in the affirmative. That being the case, you will be notified if new conditions alter the national needs. Your task, in the midst of turmoil, is to study medicine quietly and with the singleness of purpose that breeds greater accomplishment. Short cuts may be found to your medical degree, I do not know, but they must not result in less thorough training. Look at the war news if you must, but abjure the bewildering blare of radio broadcasts and resolutely ignore what you cannot forget.

In this war only a coordinated effort that takes advantage of the abilities of specially trained men can succeed. In this effort there is no place for personal pride or preference. Let the anatomy and physiology of man be your concern. It is so simple when compared to the explanation of this folly. Your immediate task is to carry on."

Thus does war come home to our neighbor on the North, land of such medical great men as Osler, Banting, Best, McCleod, Penfield and Collip. Thus bravely and in the best Anglo-Saxon tradition of devotion to duty and the ideals of free man do the honored men of Canada meet the latest challenge to their way of life. May American medicine never have to face the dark nights in store for our brothers in Canada. But if the dread gauntlet be flung, may we as unanimously respond in our adaptation as our sorely beset neighbors of the friendly Dominion.

1 McGill Med. Jour., Feb. 1940.

### ALBUQUERQUE SESSION

Elsewhere in this issue there will be found the program for the New Mexico Medical Society's annual session at Albuquerque May 27, 28 and 29. Headquarters will be at the Hilton Hotel. The registration fee of \$5.00 includes admission to all sessions, the two luncheons, the dinner-dance and the smoker.

Dr. George T. Colvard, of Deming, will retire as president and be replaced by Dr. W. B. Cantrell, of Gallup. General chairman for the meeting is Dr. B. F. Roberts, of Albuquerque. The scientific committee is composed of the following: Drs. M. K. Wylder, chairman, J. D. Lamon, J. W. Hannett and R. W. Mendelson. The social and entertainment

committee is headed by Dr. H. L. Brehmer. Chairman of the financial committee is Dr. Carl Mulky. Dr. M. P. Beam is chairman of the committee of reception and registration.

The House of Delegates opening session will be on Monday morning, May 27, at 9:00 a. m. One hour later the scientific program begins. The meeting is scheduled to end at noon, May 29. Mayor Clyde Tingley, of Albuquerque, is to deliver an address of welcome. Scientific papers are to be given by:

Dr. Carl Maynard, Pueblo, Colo.  
Dr. Willis C. Campbell, Memphis, Tenn.  
Dr. Frederick Witherell, Syracuse, N. Y.  
Dr. J. L. Emmett, Rochester, Minn.  
Dr. Ben Massey, Pasadena, Calif.  
Dr. E. M. Lazard, Los Angeles, Calif.  
Dr. Albert Soiland, Los Angeles, Calif.  
Dr. J. R. Jaeger, Denver, Colo.  
Dr. Paul Bassell, Temple, Texas.  
Dr. Rupert Raney, Los Angeles, Calif.  
Dr. R. M. Balyeat, Oklahoma City, Okla.  
Dr. Dan Stine, Columbia, Mo.  
Dr. Richard Sutton, Jr., Kansas City, Mo.  
Dr. Berne Hunt, Los Angeles, Calif.  
Dr. A. L. Levine, New Orleans, La.  
Dr. C. N. Giere, El Paso, Texas.  
Dr. George J. Pattee, Denver, Colo.  
Dr. Paul J. Conner, Denver, Colo.  
Dr. W. W. Barber, Denver, Colo.  
Dr. O. J. Farness, Tucson, Ariz.

Most of the papers are to be discussed by physicians from New Mexico and El Paso. There will be 12 commercial exhibitors and a number of scientific exhibitors. The New Mexico State Public Health Laboratory, the U. S. Indian Service and Carrie-Tingley Hospital are to have rather elaborate exhibits.

There will be entertainment for the visiting ladies and also plenty of entertainment outside of instruction for the physicians in attendance. This is the first time that Albuquerque has entertained the New Mexico Medical Society in several years. With the amount of new construction in Albuquerque there has been an increase in facilities for caring for large conventions. This year's scientific program is exceptional in its scope and the calibre of speakers selected to serve as instructors. The session promises to be one of the most valuable in the history of the New Mexico Medical Society.

### SOUTHWESTERN MEDICAL ASSOCIATION

At a recent meeting of the Executive Committee of the Southwestern Medical Association, under the direction of Dr. Orville Egbert, president, dates for the fall meeting in Tucson were set to be November 21, 22 and 23. The official hotel will be the Pioneer Hotel.

Dr. Egbert has appointed the following Program Committee: Chairman, Dr. C. A. Thomas, Tucson; Dr. Dale Biddle, Tucson; Dr. C. S. Kibler, Phoenix; Dr. Leslie Smith, El Paso; Dr. E. W. Fisk, Santa Fe; Dr. J. M. Greer, Phoenix. Dr. C. A. Thomas is also chairman of the session. The Program Committee has been allotted a larger sum of money for its budget this year than has ever been so allotted before. The work of building this fall's scientific program is well under way.

*Special Section*  
**Arizona State Medical Association**

PRESTON T. BROWN, M.D., *Associate Editor*  
403 Professional Bldg., Phoenix, Arizona

**\*AGRICULTURAL WORKER HEALTH &  
MEDICAL ASSOCIATION**

H. D. KETCHERSIDE  
Phoenix, Arizona

I have been asked to report the work of the Agricultural Workers Health and Medical Association.

I was surprised to find that many of our members did not know of the existence of such an organization, how it came into being, and what class of people it serves. Therefore I feel called upon to start at the beginning and outline the problem as well as to report on the efforts being made to meet it.

The transient agricultural worker has become a major problem only in recent years; before that time the transient laborers, in Arizona and California, consisted mostly of Mexican families, and single men. The Mexican families usually returned to Mexico when the cotton picking was completed, and the single men, being unencumbered, caught a freight train and moved on. They were not then a serious problem and are not today. Neither were the class of people who are now our chief problem considered as a social problem by the states in which they resided. For generations they had been tied to the soil and were a necessary part of the social economy of their states. They were mostly sharecroppers who managed to eke out a bare existence on 40 acres of cotton land and return a nice profit to the landowners. Very few of them were ever recipients of any form of relief. They were of good old American pioneer stock, the descendants of Daniel Boone, Davy Crockett and Sam Houston, and many of them are eligible for membership in the Sons and Daughters of the American Revolution. The difference between them and most of us here present is mostly a difference of opportunity. It is true that the hopelessness of their plight and failure to rise above it has killed much of their ambition, but this can and must be restored before any real solution of this problem can be hoped for.

What happened which changed this picture so suddenly? First, the price of cotton dropped until the sharecropper could not make a living on 40 acres and return any profit to the landowners. It became necessary to dispossess the sharecroppers and farm the land in large acreages with tractors. These people were forced to pack their belongings and their families in old cars and start looking for

work, which not to be had, for the same process was going on over a very large area.

How did they happen to come to Arizona and California? We invited them. The Arizona Cotton Growers, through newspaper articles in their home states, handbills and posters, invited them to come to Arizona, promising them higher wages and desirable working and living conditions. Of course, they came in overwhelming numbers. How they were received I believe most of you know. They could not be driven out because they had spent their last cent to get here and they no longer had any place to go. Since that time they have been moving back and forth between California and Arizona.

Of course, these people had medical problems many more than our fixed population. How did we meet these problems? Mostly by ignoring them. No one felt that the problem was theirs. It is true that many of the doctors gave unstintingly of their time without promise or hope of remuneration, but it was almost impossible to get them into a hospital and as these people had no homes the treatment was very unsatisfactory.

It was felt that these people were not our people, and the federal government, through our senators, was asked for help. The problem was accepted, and the Agricultural Workers Health and Medical Association was established in California in the spring of 1938, and extended to Arizona in November of that year, with funds obtained from the Farm Security Administration.

You should know that this organization did not immediately plunge into medical relief. The men picked to head the organization realized, as I believe most of our representatives in Washington have come to realize, that no medical program can hope to succeed without the full co-operation of the medical profession. They came first to the medical societies of the two states, presented their problem and asked for advice, and they have at all times followed the advice given.

Since the migratory farm labor population in Arizona is concentrated in Maricopa County, 84% of the cotton acreage of the state being in that area, the state medical association allowed the Maricopa County Medical Society to work out the plan, and a committee was named, of which I happened to be chairman. This committee met many times, and a fee schedule was worked out between the two states, which was understood by everyone concerned to be a substandard schedule based on the fact that this was an emergency relief program. Rules were made to see that the patient had



## *The President's Page*

IN this, my final official communication, I desire to voice my deep feeling of gratitude for the splendid cooperation given me during my tenure of office. Without this spirit of cooperation our accomplishments during the year would have been practically nil.

I am also grateful for the privilege given me to serve as your President—an honor that can come to but relatively few of the many qualified members of this Association. No man could be selected for this office of great responsibility and opportunity for service without being fully aware of his own limitations and the realization that whatever success he attains depends almost entirely on the whole-hearted cooperation and support of those with whom he is associated.

With the aid and support of YOUR Council, I have earnestly and conscientiously endeavored to conduct the affairs of OUR Association in a sound and businesslike manner, and I feel that an inspection of our records will verify the accuracy of this statement.

As we stand at the threshold of another year, we, as physicians, should look upon it as a period of retrospection. Not for the mere purpose of condemning our mistakes, but with the hope that by reviewing our past record we may be able to outline for the year about to be ushered in, a bigger and more noble plan of action. Each New Year in our Association should be to us a milestone, marking on the one hand our accomplishments and failures, and on the other hand pointing as a guiding finger to the broad expanse of future endeavor that awaits us. The question of the hour should not be, what have we accomplished, but what are we going to accomplish. Our failures and mistakes should be but a spur to a more glorious record for the years to come.

May I urge that you continue to give the incoming officers of this Association the same helpful and friendly cooperation which you have most graciously extended me in order that YOUR Association may continue its march forward?

In all sincerity,

A handwritten signature in dark ink, reading "Chas. S. Smith M.D." in a cursive script.

CHARLES S. SMITH, M. D.

free choice of physicians; and since most of these people did not already have a physician, rules were made to see that the work was distributed as evenly as possible. At the request of the organization, after the plan was put in operation, the committee from the county society was continued as a permanent advisory committee. As the program expanded into Pinal, Yuma and Graham counties, the plan as instituted in Maricopa county was adopted as a whole.

During the first year of operation in Arizona there was spent for medical relief \$199,499, of which the physicians received \$91,157, dentists \$4,003, nurses \$970, hospitals \$60,924, druggists \$16,719, medical supplies \$15,615, clinic fees to physicians \$3,001, clinic drugs \$2,329, and miscellaneous expense \$4,412.

During the period from July 1, 1939, to February 29, 1940, there has been spent for medical relief \$355,226, divided as follows:

Physicians .....	\$159,713.00
Dentists .....	8,932.00
Nurses .....	1,562.00
Hospitals .....	122,395.00
Drugs .....	22,136.00
Medical supplies .....	16,624.00
Special diets .....	537.00
Clinic fees .....	8,056.00
Clinic drugs .....	7,306.00
Miscellaneous expense .....	7,960.00

It seemed advisable for this organization to have a medical adviser in Arizona, and I resigned from the advisory committee to accept that position, but I wish you to know that we will continue to rely on the advisory committees in each county where we operate, to tell us how this organization should be run.

**PROCEEDINGS OF EL PASO COUNTY  
TUMOR CLINIC  
March 12, 1940  
EL PASO CITY-COUNTY HOSPITAL**

Present: Drs. Cathcart, Causey, Gallagher, Hardy, Holt, Murphy, Newman, Peticolas, Waite and Powell; also Dr. Buhler of Kansas City.

*Case 1.* N. E., a 68-year-old Mexican man, was present at Tumor Clinic for the first time today. Case presented by Dr. Powell, as follows: This man first noticed a small postule in the left eyebrow and superior eyelid in May of 1938. In April of 1939 he came to the clinic and a biopsy was done. Dr. Waite reported no malignancy. Treatment before entrance consisted of bismuth and K. I. gtts. Examination on entrance showed an ulcerated tumor, very rough, with itching, 2x3 cm. in measurement, in the left brow and superior eyelid. There was fixation, ulceration and induration. No regional nodes. The lesion extends into the eyebrow and has everted the superior eyelid. Biopsy scar has pulled the eyelid up also. Discus-

sion: Dr. Hardy questioned whether biopsy did any good, since the diagnosis depends so largely on clinical findings. He referred to a series of cases in another part of the country which were diagnosed malignancy by biopsy, but they lived too long and the diagnosis was changed to granuloma. Diagnosis: Ulceration of eyelid from infection following excision of the lesion. Recommendation: As soon as possible let that eyelid down by plastic surgery.

*Case 2.* T. T., a 40-year-old Mexican woman, with a tumor in the left supraclavicular region, was seen in Tumor Clinic today for the first time. Case presented by Dr. Powell, as follows: This woman first noticed a swelling in her neck in 1937. She came into the clinic in 1939, and was given SSKI gtts. The tumor was the size of a large walnut, in the left supraclavicular region. There was fixation. No ulceration, induration, roughness, bleeding or itching. No regional nodes. No similar condition in other parts of the skin. The mass is pulsating. It has never caused her pain. Discussion: Dr. Hardy remarked that the bruit was not very marked. Dr. Gallagher asked if the patient discovered the tumor herself and was told she had. Diagnosis: Aneurysm of left subclavian. Recommendation: No treatment recommended.

*Case 3.* V. B., an 18-year-old Mexican girl, with a small tumor of the anterior cervical region, was seen today for the first time in Tumor Clinic. Dr. Powell presented the case, as follows: This girl first noticed a small swelling in the neck September 1, 1939. She came to the clinic March 5, 1940. She had had no treatment before that. The tumor was submaxillary and pretracheal. No ulcer, bleeding, roughness, itching or pain. She had had no similar lesion previously. The tumor is about 2 cm. in diameter, indurated and attached to the skin. No regional nodes. Discussion: Dr. Gallagher—Sebaceous cyst; suggest cauterization. Dr. Holt—Branchial-cleft cyst. Dr. Murphy—(1) Most likely brachial cyst. (2) Ordinary sebaceous cyst. (3) Thyroglossal cyst. Recommend taking it out, being sure there is no connection with pharynx, hypopharynx, trachea or tongue. Dr. Cathcart—Branchial-cleft cyst. Recommendation: Removal (or possibly cauterization) and report at next tumor clinic.

*Case 4.* A. P., a Mexican man, age 75, with a tumor on the left side of the neck, was seen today in Tumor Clinic for the first time. Dr. Powell read the following report: This man first noticed a swelling on the left side of his neck February 12 of this year. He came into the clinic 10 days later. The tumor was about 5x2 cm. in size, and appeared to be cystic. Patient complained of slight dyspnoea and referred pharyngeal pain, and hoarseness. A biopsy was done and the laboratory reported papilloma. On questioning today, patient said the hoarseness came on suddenly 15 days ago. Discussion: Dr. Gallagher—This is entirely different from the last case. In don't see why a branchial-cleft cyst should be attached to the skin, for in-



stance. Dr. Cathcart—When they get ready to burst they inflame the skin. Dr. Gallagher—Yes, but that one is not getting ready to burst. Diagnosis: Dr. Cathcart—I think it is some sort of lymphatic stasis. Dr. Newman—I think it is a cyst. Dr. Peticolas—I think it is a cyst, but I think he has something else wrong with him, too, and I don't think surgery should be attempted at this time. Dr. Murphy—A mixed-cell tumor of the parotid. Dr. Hardy—Granuloma of some kind, possibly syphilitic. Dr. Holt—Some sort of cyst. Further discussion: Dr. Hardy—It might also be a Hodgkin's. Dr. Waite—He is too old for Hodgkin's. Dr. Hardy—The lower part of it contains fluid, but the upper part is entirely solid, I believe. It might be a gumma. He should have a Wassermann. Recommendation: Aspiration. To return to Tumor Clinic in a month.

The case of L. H., complete with autopsy report, was read by Dr. Powell. (Hospital Record No. 540.) Dr. Gallagher remarked that the working diagnosis (carcinoma of lung) was "a good guess, but not a diagnosis."

## NEWS

### General

The American Medical Golfing Association's twenty-sixth annual tournament will be held at Winged Foot Golf Club, Mamaroneck, N. Y., Monday, June 10, 1940. Some 250 out of the 1,350 Fellows of the A. M. G. A. are expected to take part at Winged Foot in the 36-hole competition.

Officers of the A. M. G. A. for 1940 are George Washington Hall, M. D., Chicago, president; D. H. Houston, M. D., Seattle, first vice-president; Grayson Carroll, M. D., St. Louis, second vice-president; Bill Burns, secretary, 2020 Olds Tower, Lansing, Mich.

All members of the A. M. A. are eligible for Fellowship in the A. M. G. A. For registration application write the secretary.

### El Paso

The regular staff meeting of the Hotel Dieu Sisters' Hospital was held Tuesday, March 5, 1940, at 12:10 p.m. in the auditorium of the Nurses' Home. Luncheon was served. The program was as follows: "Perforated Duodenal Ulcer; Subdiaphragmatic Abscess," by Dr. J. L. Murphy; discussion by Dr. James Gorman and Dr. W. W. Waite. "Bronchopneumonia; Coronary Thrombosis," by Dr. C. D. Awe; discussion by Dr. J. Mott Rawlings.

A regular meeting of the City-County Hospital Staff was held Wednesday, March 20, 1940, at 6:30 p.m., at City-County Hospital. The program was

as follows: "Syphilis in El Paso," a panel discussion by Drs. Leslie Smith, Wickliffe Curtis, Robert Thompson and A. W. Multhaupt; moderator, Dr. M. P. Spearman.

A regular meeting of the El Paso County Medical Society was held March 11, 1940, at 8:00 p.m. in the tea room of the Hotel Cortez. The program was as follows: "Low Back Pain and Sciatica," by Dr. E. W. Secord; "Recent Advances in Otolaryngology," by Dr. M. P. Spearman; "Maternal Mortality," by Dr. F. A. Snidow.

Dr. W. R. Curtis, El Paso, was recently notified that he is to be certified by the American Board of Urology, having passed its recent examinations.

## AUXILIARY NEWS

The Women's Auxiliary to the El Paso County Medical Society was held March 12, 1940, at the home of Mrs. Frank P. Schuster. Mrs. Branch Craige, present, presided.

The following were elected to the board of directors for 1940-41: Mesdames N. H. Keller, A. D. Long, Travis Bennett, C. H. Mason.

The following are the newly elected officers: President, Mrs. James W. Laws; president-elect, Mrs. Henry Safford, Jr.; first vice-president, Mrs. A. P. Black; second vice-president, Mrs. Leslie Smith; third vice-president, Mrs. J. W. Cathcart; treasurer, Mrs. Jesson Stowe; recording secretary, Mrs. Jacob Rogde; corresponding secretary, Mrs. S. G. Von Almen.

Delegates were elected to attend the state meeting in Dallas in May, 1940 as follows: Mrs. Branch Craige and Mrs. Louis Breck; alternates; Mrs. James Laws and Mrs. George Turner.

Mrs. H. T. Safford, Jr., program chairman, then introduced Mrs. Irving McNeil, who reviewed the book, "Old Santa Fe Trail," by Stanley Vestal. Mrs. Samuel Rennick, in charge of the musical part of the program, presented Miss Mansfield in two piano solos. The meeting was adjourned and tea was served. The hostesses assisting Mrs. Shuster were: Mesdames H. T. Safford, Jr., M. P. Shuster, S. A. Shuster, Hugh Shannon, F. A. Snidow, M. P. Spearman, Erich Spier, Bursleson Staten, B. F. Stevens, H. E. Stevenson, Walter Stevenson, J. L. Stowe, S. D. Swope, E. D. Strong, J. W. Tappan, S. L. Terrell, R. F. Thompson, George Turner, James Vance.

The next meeting, April 8, 1940, will be held at William Beaumont General Hospital. The hostesses will be the wives of the medical staff of William Beaumont General Hospital and Fort Bliss.

—Malvina Spearman.

## MISCELLANY

### ETHER CONVULSIONS

1. Convulsions under ether anesthesia are so unexpected and terrifying that we must have a definite plan of treatment agreed upon between anesthetist and surgeon.

2. Check temperature before anesthesia is started.

3. Adrenalin must be given instantly.

4. Soluble barbiturate must be on hand for instant use, whenever a child is being operated for an acute septic process.

5. Ether anesthesia must be stopped at once on appearance of premonitory symptoms.

6. Chloroform, oxygen and carbon-dioxide must be readily available.

7. Calcium gluconate or dextrose (50% intravenously) may be necessary to stop convulsions.—*Minn. Med.*

### OCULAR HEADACHE

Before entering the first grade, every child's eyes should be refracted under atropine so that he can be protected against abusing a pair of inadequate or deficient eyes. The girl with the nervous breakdown, the child who is inattentive, the person in business who has a headache at noon, is relieved by lunch, and then has a recurrence about 3 or 4 in the afternoon, the clock-watcher, the student who cannot concentrate, the convalescent patient who has headache and is reading in bed—these and many others belong to the group of people who have faulty, poor, or inadequate eye musculature. They may require exercises, surgery, or glasses, or all three.

I can also tell you that many of these patients require medical treatment for a deficiency in thyroid or vitamin A. Some have general muscle exhaustion due to menopausal disturbance or some cerebral disturbance. It is well to remember that a patient with ocular muscle imbalance may have his primary disturbance elsewhere, the muscle trouble being secondary and the pain the tertiary portion of the entire picture. It is well to think of these patients as sick people who need more than a pill; they need careful study and definite management. Anything short of this fails to relieve the pain.—*Jo. M. S. M. S.*

### BUT THE GREATEST OF THESE

The physicians of the United States contribute millions to charity. They render service to the unfortunate without thought of recompense. In their relation to the layman they are, in all probability, more charitable than any other professional group. The physician's charity to the underprivileged classes is not merely that of generosity from a monetary standpoint, or rendering service without thought of fee. Regardless of the race, color,

creed or financial status of the individual patient, it is to the family doctor that he turns for understanding, for kindness, for charity, for confession.

If the layman prompts a charitable response from the physician, why, in general, is the same physician so uncharitable to his fellow colleagues? Why is he so critical and so free to give voice to criticism? Why does he impugn the motives of his fellow practitioner when he is so understanding of the mistakes of the layman? Why is he frequently unkind and bitter to his professional brother, yet philosophical when provoked by a layman?

Probably the greatest source of unpleasantness between physicians is possession of patients. For some reason the physician has acquired the feeling that his patient is his chattel, and if his patient consults another physician his chattel is stolen, and the battle is on. In squatter sovereignty "possession is nine points of the law," but in medicine possession can be retained only by virtue of the continued confidence of the patient in conscientious, skillful and understanding care. The question of medical ethics is frequently embarrassing to the patient, but regardless of ethics the patient is entitled to consult whatever physician he wishes, and his choice is based on confidence in the integrity and the ability of the individual doctor. In the oath of Hippocrates the physician swears by Apollo and Aesculapius to impart a knowledge of the art to disciples. The treatment accorded the young doctor who enters a community does not ordinarily comply with the Hippocratic oath, and charity and kindness do not characterize his reception.

The physicians of these United States have much to be grateful for. There is an abundance of work for everyone, and no one man can do all the work in his particular community. Harmony and understanding would prevail if the doctor would emulate the example of Paul, who taught, "Charity is patient, is kind; charity envieth not, dealeth not perversely; is not puffed up, is not ambitious, seeketh not her own, is not provoked to anger, thinketh no evil; rejoiceth not in iniquity, but rejoiceth with the truth."—*Jo Iowa St. Med. Soc.*

### MINIATURE FILMS

The General Electric X-ray Corporation announces the successful "development of a reasonably accurate yet relatively inexpensive method of applying x-ray examination to large groups of people." The method consists of photographing the fluorescent image on 4x5-inch films. An extremely fast screen has been developed as well as a specially prepared lens capable of producing a very sharp image. The method is apparently superior to the use of sensitized paper, fluoroscopy and the smaller 35-mm. film.

At the last meeting of the Radiological Society of America, Potter, Douglas and Birkelo reported, in a comparative study of 1,610 chests, using the standard 14x17-inch and the new 4x5-inch films, results which indicate the surprising accuracy of



the new method. There was an error of only 2.6% in a total of 271 active lesions demonstrated by both methods. The new photoroentgenographs are employed without preliminary tuberculin testing, are relatively inexpensive, and should therefore have a place in mass surveys for pulmonary tuberculosis.—*Va. Med. Mo.*

#### FACTORS IN ETIOLOGY OF STERILITY

**Constitutional**—Chronic infection; tonsils; teeth; poor health; anemia; lack of rest; protein starvation; alcoholism; undernutrition; diabetes; T. B.; syphilis; past age of optimum fertility.

**Endocrine**—Pituitary deficiency; ovarian; thyroid; menstrual disturbance; amenorrhea; oligomenorrhea; hypomenorrhea; polymenorrhea; menorrhagia; anovulatory menstruation.

**Faults in Reception**—Dyspareunia; vaginismus; frigidity; relaxed perineum; sperm immunity; coitus interruptus.

**Hostility to Sperm in Vagina**—Excessive vaginal acidity; leucorrhea; trichomona vaginalis.

**Cervical Conditions**—Abnormal position of cervix; abnormal external os; cervical stricture; lacerations; polyp; acidity of cervical secretions; cervical infection; gonococcal; nonspecific; erosion; viscid mucus plug.

**Uterine Conditions**—Infantile uterus; uterine fibroids; retroversion; congenital anomalies; endometrial anomalies.

**Tubal Occlusion**—Unexplained; post-abortion; gonococcal; tuberculous; adhesions subsequent to abdominal operation; angulation of tubes from retroversion; endometriosis; tubal spasm; tubal atonicity.

**Defective Ovulation**—Endocrine (pituitary, thyroid); peri-ovarian adhesions; thickened tunica albuginea; follicle cystosis; dermoid cysts; persistent corpus luteum.

**Husband**—(1) Constitutional. (2) Endocrine. (3) Occluded vas. (4) Sperm deficiency.

—*Va. Med. Mo.*

#### DETERMINATION OF RAPE

The exact time, date and hour of the physician's examination should be carefully noted as well as a careful history of the assault. Permission for the examination must be obtained, either verbally before witnesses, or in writing.

The examination entails: (1) General physical appearance and demeanor. Difficulty in walking is more apt to be noted in minors. (2) Presence or absence of marks of violence on the body, their character and position. (3) Presence or absence of marks or stains on clothing. (4) Condition of the genitalia as to blood; bruising or injury to vulva; presence or absence of hymen; if lacerated, the extent and direction of rupture; presence of menstruation; whether the woman has been accustomed to intercourse. The fact that menstrual blood usually contains epithelial cells, whereas

blood from injuries would be free of such cells, must be borne in mind. (5) Presence of venereal disease. (6) Whether pregnant or not. (7) A specimen of the secretion from both vagina and vulva should be studied for spermatazoa.

If the woman is seen early, bruising may not be apparent and it would be advisable to re-examine her some hours later. Slight genital injury, with no evidence of external violence, requires a cautious opinion. Such signs may disappear within four to five days and even severe lacerations may be obliterated in two to three weeks. As stated by Gonzales, "a ruptured hymen would not necessarily signify rape, nor would an intact hymen preclude it." The onset in the woman of a venereal disease of the same variety as that found in the accused constitutes valuable medical testimony.—*West. J. Surg. Ob. and Gyn.*

#### ACUTE EAR

Treatment of ear infections is a problem for those who assume the responsibility of treating children.

1. Many ear infections will be prevented by early use of nose drops that shrink swollen tissues and by sulfanilamide in treatment of upper respiratory infections.

2. A painful, bulging ear drum in a child with fever that does not subside, should be opened, if there is no response to treatment within 24 hours.

3. Sulfanilamide is advisable and effective when given in graduated doses which become smaller each day. Several courses may be necessary if complications arise.

4. Ear discharge subsides in one-half to one-third the average time when sulfanilamide is used.

5. Mastoiditis is a less frequent complication. When it occurs, medical treatment will usually be effective in most cases, if drainage is maintained through the ear and sulfanilamide is used as directed.

6. Repeated ear infections may be avoided by removal of diseased tonsils and adenoids, treatment of sinus infections and of underlying nasal allergy which is so frequently associated with so-called chronic sinus infections.—*N. W. Med.*

#### ACCIDENTS

Accidents, preventable or otherwise, constitute one of the greatest and most calamitous risks of existence.

Aside from the psychological element of personal loss, the economic deficit of the *disabling* accident ranks only slightly less than that of the casualty that is a fatality.

Industrial accidents have decreased materially through protective legislation. Unfortunately the preventable accident, according to statistics, indicates material increase.

Even more than illness, accidents are one of the chief causes of physical and economic disability.

Reliable statistics show that annually the population of the United States sustains *ten million disabling accidents*, a daily average of about 30,000, and because of which a consequent body of some 500,000 persons is kept from usual daily tasks by accident. Accident fatalities run about 100,000 deaths per annum.

These figures read like the casualties of war.

Another item that calls for thoughtful deliberation is the fact that low income families (\$1,000 per annum or less) and those families on relief has the higher proportion of accidents. Two authorities call attention to the fact that in "relief families" *home accidents* were 43% higher than in families running in the \$3,000 income class and upwards.

Of "home accidents" it is reported that 59% are occasioned by falls. Such accidents are due probably to disrepair of the buildings occupied, worn or weakened carpetings or furniture, or the inevitable inconvenient and insufficient lighting arrangements of the establishments of the more destitute.—*Ill. Med. Jo.*

### BOOK NOTES

DISEASES OF THE GALLBLADDER AND BILE DUCTS: B. Waltman Walters, B.S., M.D., M.S. in Surgery, Sc.D., F.A.C.S.

Head of Section in Division of Surgery, The Mayo Clinic; Professor of Surgery, The Mayo Foundation (University of Minnesota); and Albert M. Snell, B.S., M.D., M.S. in Medicine, F.A.C.P., Head of Section in Division of Medicine, The Mayo Clinic; Professor of Medicine, The Mayo Foundation (University of Minnesota). 645 pages with 342 illustrations on 195 figures. Philadelphia and London: W. B. Saunders Company, 1940. Cloth, \$10.00.

The authors present the profession with a treatise on diseases of the gallbladder and bile ducts which not only provides interesting reading but is complete, thorough and exact in its composition.

This is a practical medical and surgical review of the experience of the Mayo Clinic over a period of half a century. Theoretical detail is limited to a pleasing degree, only including such material as is essential to the better understanding of the points under discussion. An extensive bibliography appearing at the end of each chapter acknowledges the contributions of others in this field and directs the reader to his articles of choice.

In addition to the authors, other members of the staff of the Mayo Clinic have edited several chapters, including Drs. Jesse L. Bollman, Hugh R. Butt, Howard K. Gray, George M. Higgins, B. R. Kirklin, William C. MacCarty and Thomas B. Magath. Sister Mary William has written the chapter on the technic in the operating room.

Many photographs of specimens, charts and drawings are included.

The differential diagnosis of gallbladder condi-

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\*"Treatment of Acute Anterior Urethritis with Silver Picrate," Knight and Shelanski, *AMERICAN JOURNAL OF SYPHILIS, GONORRHEA AND VENEREAL DISEASES*, Vol. 23, No. 2, pages 201-206, March, 1939.

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tions is stressed in considerable detail. The subject of jaundice is elaborated and the detailed pre-operative and post-operative care of patients with this complication is presented. Both authors have long been identified in this field of investigation.

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The authors have succeeded in approaching near perfection in presenting this subject, and every member of the profession treating abdominal diseases will profit by a close study of this concise and well-edited volume.—*J. J. G.*

**THE PATIENT'S DILEMMA**—The quest for Medical Security in America, by Hugh Cabot, M.D.; Reynal and Hitchcock, New York: 1940.

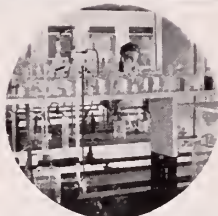
The book is written from an idealistic point of view and hence is a valuable contribution to the problems of medical care irrespective of the personal views of the author, which are unobtrusive. The gist of the facts presented are that "good

medical care" differs from what has been spoken of as "adequate medical care," and that while much of the general public usually has adequate medical care only a relatively small fraction of the public has the best medical care which scientific medicine affords. There is too great a lag—often years—between the discovery and application of medical facts. To accomplish the purpose of getting the best of medical care to most persons there must be governmental control of medical practice administered by medical experts. All children should have preventive measures against smallpox, diphtheria, typhoid, etc. Parents should see to this; having them do this is a good part of the "dilemma." Hospitals should have water provided for them and they should be allowed to go to the water and even led to it, but when they will not drink how shall they be made to drink? The author does not tell how to get the American public to fully appreciate the great importance of the application of disease preventive measures, and of prohibiting the work of quacks and the fallacious advertising of quacks and "proprietary medicines." Nor does Dr. Cabot tell how the medical experts might police the medical profession to see that its members are universally up-to-date in their diagnostic and therapeutic measures.

The book is thought provocative and should be carefully and non-prejudicially read generally by physicians and by laymen.—*O. H. B.*

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PICTURE OF HEALTH. by James Clark; illustrated by Guy Rowe; The MacMillan Company; New York; 1940.

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LEE ON THE LEVEE (historical novel), by Ralph Cannon; The Saravan House, publishers; New York.

Two famous characters, one a physician, were associated intimately for a time while Beaumont was making St. Louis his permanent headquarters. From 1837 to 1840—one century ago—Lee was sent by the United States government to supervise work designed to maintain the channel of the Mississippi river in *status quo* so that the landings at St. Louis would not become inaccessible to river traffic. At that time St. Louis was a growing settlement and houses were scarce. As a result, Lee and his family were domiciled with Dr. Beaumont and his family in the house known as the Governor William Clark mansion—Clark of Lewis and Clark fame. The intimacy which developed between the families led to a continued correspondence through years after Lee's work in St. Louis was terminated. Lee's letters to Beaumont have fortunately been preserved by Ethan Allen Beaumont, grandson of the great physiologist. These letters obtained from Mr. Beaumont by Dr. Arno B. Luckhardt of the University of Chicago constitute the basis for a

most interesting tale woven by the facile pen of Ralph Cannon.

Medical men generally will be interested in the intimate picture of Beaumont and Alexis St. Martin and those who know something of the Mississippi and the boating which took place upon it in the days of Mark Twain and other famous characters, will be doubly interested.—O. H. B.

FRONTIER DOCTOR, by Urling C. Coe, M.D.; The MacMillan Company, New York; 1939.

This is an entertaining, instructive, well-written story of the interesting, happy, humorous, sordid, and often physically and mentally hard experiences of a scientifically trained, philosophic, athletic American who devoted himself to caring for the problems of health of a community which is now thought of and spoken of as perhaps a hundred or more communities.

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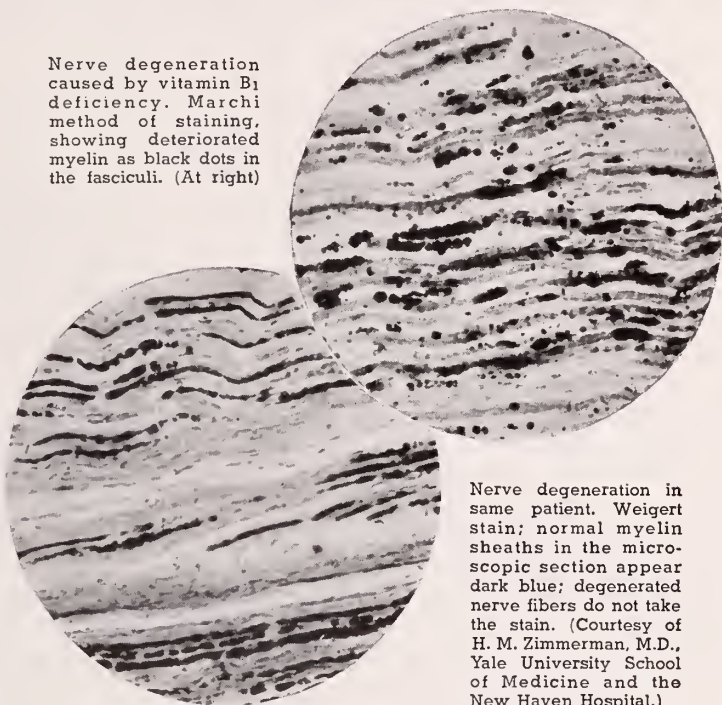
# STUDIES IN THE AVITAMINOSES



This page is the fifth of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A full color, two-page insert on the same subject appears in the April 27 issue of The Journal of the American Medical Association.

ONE of the specific lesions resulting from thiamin deprivation consists of degenerative changes in the myelin sheaths of nerve fibers. In peripheral nerves, the myelin breaks down into small globules and finally disappears, and the axis-cylinder undergoes atrophy and fragmentation. Degeneration has been described also in the spinal cord, especially in the posterior columns and anterior and posterior nerve roots, and in the posterior spinal ganglions and the anterior horn cells.

Nerve degeneration caused by vitamin B<sub>1</sub> deficiency. Marchi method of staining, showing deteriorated myelin as black dots in the fasciculi. (At right)



Nerve degeneration in same patient. Weigert stain; normal myelin sheaths in the microscopic section appear dark blue; degenerated nerve fibers do not take the stain. (Courtesy of H. M. Zimmerman, M.D., Yale University School of Medicine and the New Haven Hospital.)

## The Neurologic Manifestations of Vitamin B<sub>1</sub> Deficiency



Above, peripheral neuritis of nutritional etiology; note limited dorsiflexion. At right, improvement in dorsiflexion after two and one-half weeks of thiamin chloride therapy. (Courtesy of Henry Field, Jr., M.D., University of Michigan.)



THE early manifestations of vitamin B<sub>1</sub> deficiency affecting peripheral nerves are pain and burning along the involved sensory neurons and impairment of motor nerve function. If the deficiency remains uncorrected, fragmentation of the axis-cylinders of motor nerves follows, leading to further loss of function and atrophy of the innervated muscles. Administration of thiamin chloride over a prolonged period slowly produces regeneration of the involved neurons. If complete degeneration of cells and axis-cylinders in the central nervous system has occurred, regeneration cannot take place.

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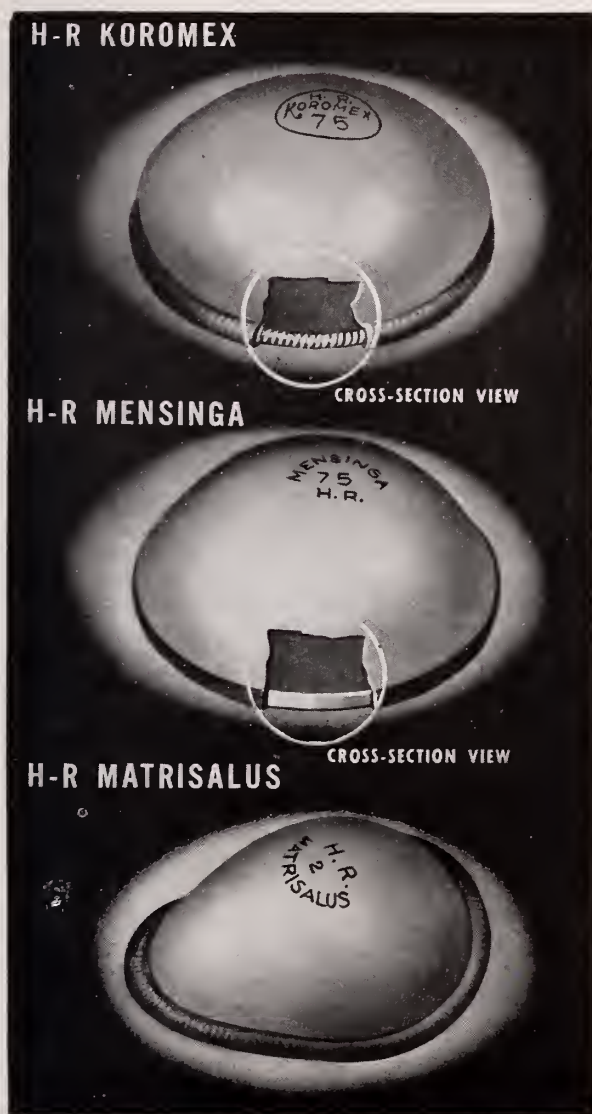
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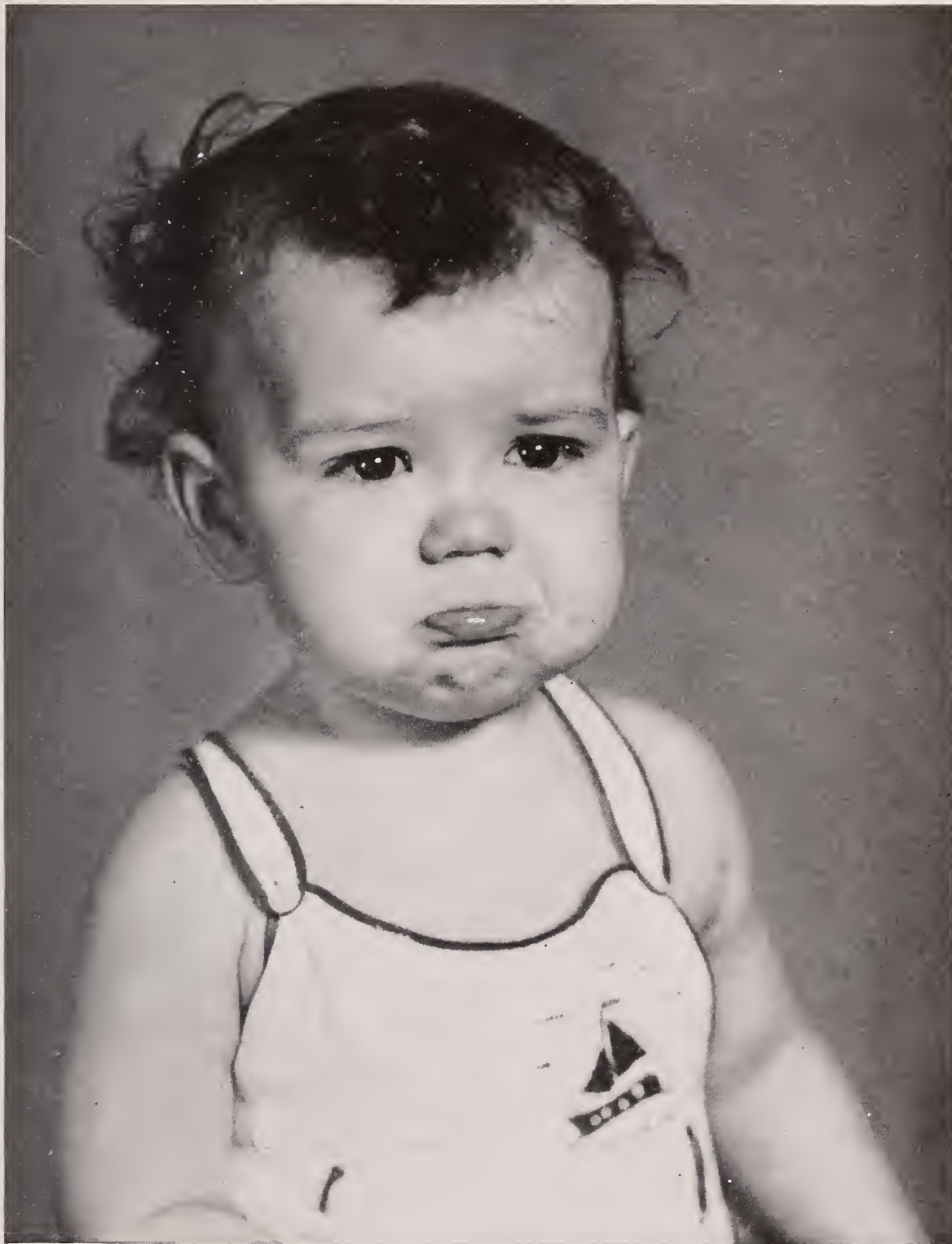
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Myerson, A.: Effect of Benzedrine Sulfate on Mood and Fatigue in Normal and in Neurotic Persons—Arch. Neurol. & Psychiat., 36:816, Oct., 1936.

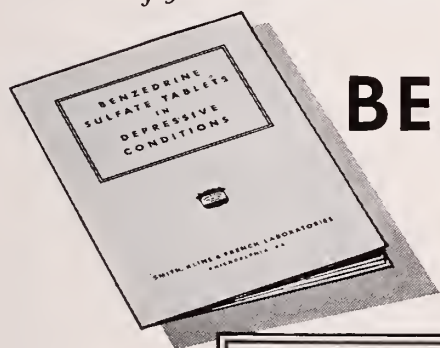
Wilbur, D. L.; MacLean, A. R. and Allen, E. V.: Clinical Observations on the Effects of Benzedrine Sulphate—Proc. Staff Meet. Mayo Clin., 12:97, Feb. 17, 1937.

Woolley, L. F.: The Clinical Effects of Benzedrine Sulphate in Mental Patients with Retarded Activity—Psychiatric Quart., 12:66, January, 1938.

Davidoff, E. and Reifenstein, E. C., Jr.: The Stimulating Action of Benzedrine Sulfate—J.A.M.A., 108:1770, May 22, 1937.

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EL PASO, TEXAS, MAY, 1940

No. 5

## Organized Medicine — A Professional Guild

D. F. HARBRIDGE, M. D.

*Phoenix, Arizona*

YOU have all, no doubt, heard the following story, which is an old one, but which is very pertinent to my subject today. A planter down in Kentucky had just employed a new mule driver, a negro. He handed the driver a new blacksnake whip, climbed up on a seat with him behind a pair of mules and asked the dinky if he could use the whip. Without a word, the mule-driver flicked a beautiful butterfly from a clover blossom alongside the road. "That isn't so bad," remarked the planter; "now can you hit that honeybee over there?" Again the negro swung the whip and the honeybee fell dead. Noting a pair of bumblebees on still another blossom, the negro switched them out of existence with the cracker of his new whip and drew still further admiration from his new boss. A little further along the planter spied a hornets' nest in a bush beside the road. "Can you hit them, Sam?" he asked. "Yas, Sah, I kin," replied the negro, "but I ain't a goin' to, dey's organized."

Now I have a few things in mind relative to the value and status of organized medicine which I wish to bring to you and to impress upon you, as colored Sam was impressed with the organization of the hornets in their nest.

Meetings such as we are holding here at this time emphasize the value of organization. Whatever of worth there may be in the spirit of personal and professional fraternity which results from the coming together of the physicians of our guild has, as the motivating force behind it, the inestimable power of organization. A successful meeting in itself is a product of a vast amount of organization. This meeting will have missed its mark if it has not impressed on each one in attendance the essential need of preserving and building up this organization.

It is because you are organized that you have been able to pool your forces and your funds to bring outstanding speakers here to address you on the newest proven procedures in the fields of medical practice they represent.

Many medical leaders, nation-wide, have had much to say of late as to the changing aspects of

organized medicine, linking the old with the new in a most appropriate manner. Because I am in such full accord with many of the sentiments I have seen expressed in medical writings of the past two years or so, I am going to incorporate some of these thoughts in my address today, as they are thoughts which have been near and dear to my heart for these many years, as they ring so true and so clear in this day of social confusion.

If you think I plan to engage in some boresome reminiscing or sermonizing, set your minds at rest, for I do not intend to do that. While the comments I shall make emanate from the more experienced men in the practice of medicine, they are not the thoughts of any "old fogey." Frankly, I do not like to hear the more experienced men in any walk of life referred to as "old fogies," any more than I do to hear the younger men in this or any other assembly, in the initial steps of their chosen calling, referred to as "young upstarts" or "whipper-snappers." There is no place in organized medicine for either "old fogies" or "young upstarts"—we are all professional men pulling together in a service for humanity.

This particular medical association assembled here for a three days' feast of scientific entertainment, will celebrate its fiftieth year of organization next year. Doubtless many of you were not aware, until you just heard the statement, that the Arizona Medical Association is on the eve of its Golden Jubilee.

The progress of scientific medicine during this half century of our existence as a local organization has truly been astounding. I need not recount these achievements to this audience, for no one knows better than you just what this progress has been. Nevertheless, with *all* this progress and *all* our scientific triumphs, organized medicine hears a discordant note as we approach the half way mark of the twentieth century. There are those sitting in what they and the public consider high places who seem to think that organized medicine exists to protect its own interests at the expense of the public at large, and to compel the conformity of its members to practices of so-called professional ethics. An impartial study of our professional ethics will reveal that they are inspired by

the golden rule, are *not* against public policy, and are *not* a matter of sharply defined rules of conduct, but of fair dealing between physicians, and between physicians and their patients. I would remind such critics that "medicine exists for the benefit of the afflicted, and not the afflicted for the benefit of medicine." Mutual improvement in medicine, the interchange of experiences and opinions, the discussion of changes in medical practice—these are the outstanding purposes of our guild, and we must not and will not let the multiplying problems of a complex social economy divert our attention so that we forget these purposes.

I have said that there are those sitting in high places who are sounding a discordant note against organized medicine. This discordant note has to do with medical service rather than medical practice—and medical service at a price, the price being restriction and regimentation. Sounding this sour note are the economist and the sociologist who have arrived on the American scene and in the medical field. They are implemented by propagandists. By their activities they have diminished, and in some instances almost destroyed the faith of the public in the medical leadership which accomplished so much for the public welfare before the arrival of the expert economist and the expert sociologist. Their fascinating theories, couched in cleverly formed phrases and uttered in well-cultivated voices make a stronger appeal, in many instances, than the calm, logical voice of experienced medicine.

The economist forgets, or ignores, that the man of medicine is not trained to work for money. The medical student is taught from the outset that he is not to work for money or to work for fame, but to search for knowledge and to seek to relieve the suffering of mankind. If the economist has his way and continues to seek a service at a price, he will soon find himself in the position of the family employing a Chinese cook. In employing this Chinese cook the question of salary arose. "What do you charge for your cooking, Ying?" asked the lady of the house. "What kind of cooking you wantee?" countered Ying. "Me do \$20 cooking, or me do \$10 cooking." The physician, if permitted to continue with his private practice, will give his patients, as always, good substantial \$20 cooking, but if hired to serve medicine at a price is very apt to lag into indifferent \$10 cooking. If profit is to be removed from medicine, physicians will at best become draft animals. If the question of gain is to be removed from medicine and the general public taxed so that those not having medical care may have it, then why not sell automobiles at cost and levy a tax on the public so that those not able to buy automobiles even at cost may have them free. One proposition is as reasonable as the other in the final analysis.

A socialized medicine is being proposed in place of an organized medicine. Organized medicine has its roots in democracy, for "Wherever the art of medicine is found, there also is found a love for

humanity." Socialized medicine does not have its roots in the democratic principles which have made this country great, for it would destroy individual initiative. It is true that the government must assume its rightful responsibility for the care of those on welfare rolls, but there must be a limit beyond which government must not stop without usurping personal responsibility. Government's first problem in medical service is to provide adequate care for those on relief; its second consideration is to permit the medical profession and organization to till its own field. "Medical problems can best be solved by medical practitioners, not by ambitious, if well informed, politicians who never circumcised a young man nor catheterized an old one." Our changing medical service can and must be changed only by the physician himself, through his medical society, and not through regimentation. The medical practitioner must be free from bureaucratic control in order that he may go his untrammelled way in adding his mite to the beneficent influence which our profession has always contributed to the upward progress of humanity.

There is much in organized medicine on which to chew—organized medicine being the accumulated knowledge of master minds in the practice of medicine. It seems to me that the present-day reformist is failing to get at the meat of the thing. I am reminded of the Mutt and Jeff sandwich story. Mutt opened a sandwich shop and Jeff dropped in and ordered a ham sandwich. The sandwich was served. Jeff took a bite, looked at Mutt and said, "I don't taste any ham." Mutt replied, "You didn't bite in far enough." Whereupon Jeff took another bite, only to look at Mutt again and say, "I still don't taste any ham." "Of course not," countered Mutt, looking at the sandwich, "You bit over it that time." So it is with the socialistic critic of the practice of medicine. First, he does not bite in far enough. He says the profit motif of medicine is wrong, when it is not the profit motif at all. Modern business and industry is stimulated by the anticipation of financial gain, whereas with the practitioner of medicine it is as true today as it was in the day of Osler, except in rare instances, that the first five years of medical practice is the bread and water period; the second five years the bread and butter period, while in the third five years cakes and ale may be anticipated if the medical practitioner is fortunate. Business and industry is measured by *mounting* curves of production and consumption or supply and demand, whereas medical progress, in contrast, is measured by *declining* curves of demands for medical services.

The propagandist bites over the ham in the sandwich when he says that millions are going without medical care, but fails to find a way whereby those millions may be given sufficient gainful employment to provide them with the necessary food, clothing and shelter which have much to do with their basic health needs. The economist is accused to dealing with human beings in the mass,



whereas the medical practitioner deals with humans as individuals. There are a lot of human beings on earth. In the mass they are terrible, but individually few are bad. The physician deals with these individuals. His purpose is the care of the sick and the prevention of illness. Our guild exists that we may take better care of the sick. The purposes of organized medicine clearly state that we "shall promote the science and art of medicine, elevate the standards of medical education and promote the public health." The critic of organized medicine has failed to bite in that far and has not yet tasted the flavor and savor of the meat. He would make the practice of medicine ridiculous, and I would remind him, in the words of Sudhoff, that "Medicine is a sacred calling and he who makes it ridiculous is guilty of sacrilege."

It is true that the social order is changing. It is also true that the principles of organization—of *all* organization and not medicine alone—are changing. There must be changes all along the line, but these changes must be *evolutionary* and not *revolutionary*, if the principles of American living are to prevail. Cool, calm, collected thinking can bring order out of the present economic and social complexities, whereas the venom and passion of false values of living being flung by the propagandist will result in chaos and little else.

This brings us down to cases. There was a time when the major function of organized medicine was the promotion of scientific activities and the improvement of our scientific and professional standards. That function still maintains. In the past the legislative activities of organized medicine were directed mainly at protecting the public against inefficiently trained men, diploma mills, and substandard education. We supported efforts at preventive health measures. Our intra-organizational activities were devoted to scientific programs. As an organized profession we know little of public relation activities. In fact, we were left severely alone to treat the sick, and any problem involving medical service was *our* problem. The records of organized medicine and of the physician in his private practice show how squarely we met those responsibilities, and we felt then no need to justify our existence or to defend our prerogatives before the public.

Today the picture has materially changed. Organized medicine is deeply conscious of the responsibility that is ours, to maintain a structure which will insure a continuing improved medical service and sound progress in both the broad fields of public health and individualized medical service. This situation necessitates an understanding of social problems, political machinery, public or mass psychology, and of economics. Those charged with the responsibility of directing the destinies of organized medicine find themselves today coping with all sorts of medical problems not normally within the scope of the practicing physician. The hardest problem of organized medicine today and for the future lies not in the possible necessity of readjust-

ing our economic set-up, but rather in holding to high ethical standards in the demoralizing effect of commercialization.

Many physicians hold a lethargic attitude toward the threats against organized medicine—they hope and pray that socialized medicine will not come to our people, and let it go at that. Two little girls were about to be late for school. Said one little girl, "Let's stop and pray that we won't be late." Said the other, "Let's pray, but let's keep running while we pray." The general practitioner of medicine must follow the suggestion of the second little girl—he must pray and keep running while he prays.

The general practitioner is the vertebra of medicine. He must be inspired to use his peculiar talents, for there are many physicians who are qualified for public leadership although very few exercise their abilities. Our association numbers in its ranks men of vision, capacity, resourcefulness and leadership. Let these men exert their abilities and let the rank and file of medical practitioners fall in behind them with a firm insistence for the preservation of the sound principles of our calling, an insistence which will not weaken in the face of the hysterical demands of the equally hysterical propagandist.

If American medicine is to be saved from disaster, it must be through organized medicine, and the individual physician must be prepared to play his part or take the consequences. Propaganda can be met only by counter-propaganda. Half truths, illogical deductions, insidious innuendoes, and their like, can only be met by refutations and counter-activities that give the lie to them. The National Physicians' Committee for the Extension of Medical Care is organized and constructed to do this. In a sense they are the minute-men of medicine and each of us should lend his support to the program they have undertaken.

In this, our medical organization in Arizona, the responsibilities pointed out do not rest entirely with the officers of your association. In the last analysis, the rank and file of the membership are the ones responsible. They should make it their business to take an active constructive part in the affairs of the association, keep themselves thoroughly and fully informed on the social and political problems and be prepared to meet them intelligently. They should elect to office, in county as well as state, men who are qualified to lead the affairs of organized medicine through the deepening waters of national strife and discord. The membership should give its unequivocal support to the officers elected by a constructive participation in all the deliberations and the activities of the society and of the association. If each individual physician will do his full part, both as a private practitioner of medicine and as a member of his professional guild, our case will rest pretty largely in the hands of our patients and ourselves and there will be little to fear as to the outcome. A great deal has been accomplished in recent years

through our organizations, county, state and national, but a great deal more can, and must, be done if we are to hold our proper position in this modern changing society.

You know the old adages such as "He can who thinks he can," and "Where there is a will there is a way," all of which apply to the solution of the problem before organized medicine. There is the more recent blank verse—most pertinent, indeed—unidentified as to author, which says, "The Lord gave man two ends, one to sit on and the other to think with. A man's success depends upon which end he uses most. It is a case of heads you win or tails you lose. Take your choice."

In the last analysis, however, if there be a cure for the existing disorders it may come when a courageous leader arises who will tell the people that the hard, thorny path to the only Utopia we can ever have on earth requires that we be honest and not evasive with ourselves, our problems, and our fellowman. This would apply to physicians and reformists alike. When people in all walks of life, in all businesses, all industries, and all professions will accept their difficulties instead of trying to escape them, try to make themselves more worthy, try to *give* more, rather than to *get* more, perhaps the way out will be made clear.

Until that day comes, I say: Here is your organization. Use it. Serve it. Chart your course

and set your sail. Face the storms and meet them. Organized medicine can ride the crest and hold firm to its democratic course which has served humanity throughout the ages. As we sail, let us remember—

"Some ships strike East,  
Some ships strike West,  
While the self same breezes blow.  
It's the set of the sail  
And not the gale,  
Which bids them where to go.

Like the winds of the sea,  
Are the ways of fate,  
As we journey along through Life;  
It's the set of the Soul  
That determines the goal,  
And not the calm or the strife."

Professional Bld'g.

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## Tube Decompression in Intestinal Obstruction

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IT HAS long been known that the mortality rate in intestinal obstruction is high, and that this has been especially true in the cases of postoperative obstruction. Actually the mortality rate has seldom until recently been less than 35%, and for the most part has ranged between 35% and 60% in the various clinics and hospitals of the world. In spite of the voluminous literature on the subject and the vast amount of work which was done previous to 1933 on intestinal obstruction in the attempt to establish the factor or factors responsible for death in obstruction of the bowel, the management has settled down to a very few definite principles, namely, (1) early recognition, (2) early operative treatment, and (3) maintenance of fluid and chemical balance. These principles have been emphasized so much in the literature since 1915 that they should now be accepted as gospel. While the factor of distention has been mentioned in the literature from time to time in the past, its real significance has been repeatedly pointed out since 1931 by Wangenstein<sup>1, 2, 3, 4</sup> and his co-workers, and it is now quite generally accepted that distention of the bowel which results in increased intraluminal

pressure, decreased viability, and increased permeability of the intestinal wall, and generalized peritonitis, is the chief factor in most of the fatalities which occur in simple organic intestinal obstruction, and that the chemical and so-called toxic changes are only secondary to this factor. This, of course, does not apply to the strangulation type of obstruction where the blood supply to the bowel is impaired. In 1938 Wangenstein<sup>3</sup> presented very convincing evidence that swallowed air is largely responsible for the distention in the presence of obstruction. In 1939 he<sup>4</sup> and his co-workers reported the results of the management of distention over a 7-year period by means of tube suction drainage, and their results are so conclusive that we must now recognize this method of management of distention as another very definite principle in the treatment of certain types of intestinal obstruction.

Many surgeons have made the observation that if distention can be prevented or relieved, then simple organic obstruction does not constitute a surgical emergency, and if satisfactory decompression of the intestinal tract is obtained many of the early postoperative obstructions will be relieved permanently. Previous to the introduction of the tube method of

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decompression, an enterostomy was frequently employed for the relief of distention. Although the operation of enterostomy has been in use since the time of Renault, it is only in relatively recent years that it has been popularized as a simple decompression procedure to supplant exploration and corrective operations in the emergency treatment of acute mechanical obstruction. Even as a decompression procedure, the merits of this operation are difficult to ascertain, as has been pointed out by Shelley,<sup>5</sup> and by Fey and Cubbins.<sup>6</sup> Certainly the results of enterostomy do not compare with those of tube decompression.

As the result of the work of Miller, Abbott,<sup>7, 8</sup> and Johnston,<sup>7, 9</sup> we now have a method of intubation of the entire small bowel by means of the Miller-Abbott tube. The tube consists of a double lumen tube; the smaller inner tube serves the purpose of distending a balloon at the distal end of the outer tube after the first portion of the duodenum has been passed. The technic of passing this tube is similar to that of passing any tube as far as the stomach. The tube is slipped through the nose, and with the patient drinking water, it is swallowed readily into the stomach. At 45 cm. the tip of the tube will lie just within the stomach of the average adult patient. The stomach is washed clean and should be empty. The patient is then turned on the right side, allowed to drink water, and the tube is advanced slowly so that in 3 or 4 hours the 75-cm. mark will have been passed. In about 50% of the cases the tip of the tube will then lie in the duodenum. In our experience the best criteria that the tube is in the small bowel are the character of fluid recovered through the tube, the sense of resistance encountered as the balloon is distended, and the roentgen film. In those patients in whom the tube does not pass, a number of things may be done to facilitate its passage. The tube is withdrawn to the 45-cm. mark and often it is possible to pass the tube through the pylorus by slowly advancing it while a discussion is engaged in about such food or liquids as might appeal to the patient, thereby instituting gastric peristalsis by the psychic stimulus. Also, the patient may be rapidly atropinized in the hope of producing relaxation of the pylorus. However, the objection to atropine is that it accelerates the usually already rapid pulse. Fluoroscopic guidance of the tube can be carried out if the patient is not too ill to stand the necessary changes in position. Success in one instance in which all other methods had failed was obtained by turning the patient on the extreme left side, filling the stomach with water, the balloon with air and gradually advancing the tube under the fluoroscope the air-filled balloon floating upward to the pylorus. The stomach and the balloon were then emptied, and after the patient was returned to bed he was given a bottle of beer, which he had been craving for days. Within 3 hours the tube was in the duodenum.

Care must be exercised not to advance the tube too rapidly before it has passed the pylorus. If the

tube is allowed to buckle or coil up in the stomach, it is improbable that the tip will enter the duodenum. After the tube is definitely in the small bowel and the balloon has been distended, it may be advanced at the rate of from 4 to 6 inches an hour. Continuous suction is maintained and the tube is irrigated frequently. While no method of passing the tube succeeds in every case, and while as yet no standardized technic has been established which will assure its early passage in all cases, resort to the various maneuvers usually will result in successful intubation of the intestine. It should be remembered that one is working against time while the intubation is being carried out, during which a simple mechanical obstruction may become converted into obstruction complicated by peritonitis. Careful, patient supervision of the entire procedure and close observation of the patient are necessary at all times. The relief to the patient is usually prompt and remarkable, and may be observed very soon after the tube has passed the pylorus.

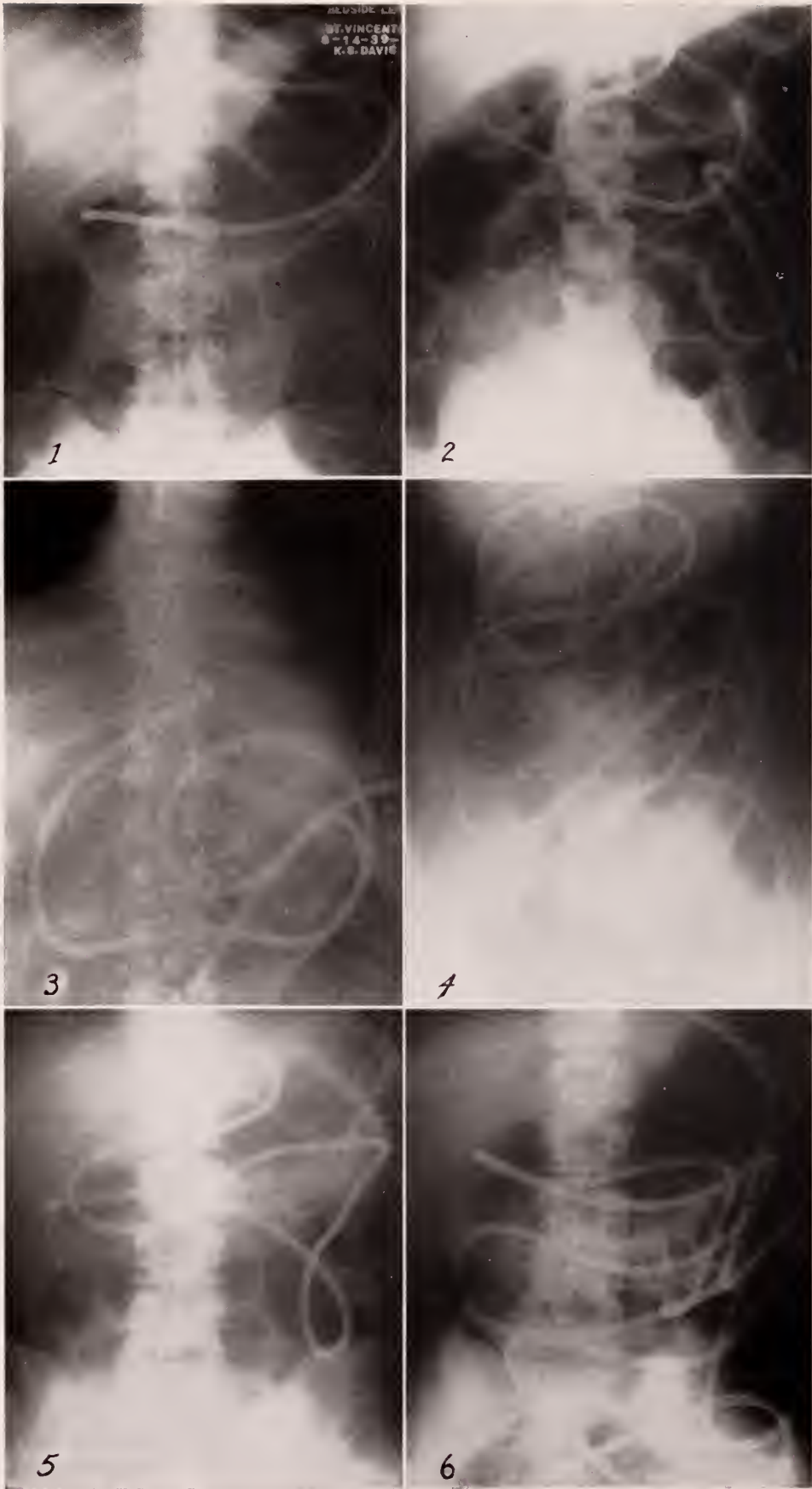
#### CASE REPORTS

The following cases are representative of various types of intestinal obstruction which have been treated by the tube suction decompression.

*Case No. 1.* On June 3, 1939, a male, 30 years of age, was operated upon at St. Vincent's Hospital for an acute retrocecal appendicitis. On the third postoperative day he developed signs and symptoms of mechanical obstruction of the small bowel. A Levine tube was introduced and suction was maintained for 4 days. He was given intravenous fluids, and hot stupes were applied to the abdomen. The abdomen remained somewhat distended, the patient passed neither gas nor feces in spite of enemas, and there were intermittent colicky pains with associated audible peristalsis. The Levine tube was then removed and the Miller-Abbott tube was passed into the stomach. In 5 hours the tip of the tube was in the upper small bowel; in 48 hours the abdominal distention had disappeared and some flatus was passed. On the third and fourth days the patient passed large, soft stools. The tube was clamped off at this time and it was removed on the fifth day. The patient was dismissed from the hospital 4 days later, and has had no obstructive symptoms in the year which has elapsed.

*Case No. 2.* On August 22, 1938, a female, 19 years of age, was operated upon at St. Vincent's Hospital for an acute gangrenous appendicitis with marked edema of the terminal ileum and cecum. On the sixth postoperative day symptoms and signs of acute small bowel obstruction developed. A Levine tube was passed and suction was maintained for the following 3 days, during which time no flatus was passed, there was intermittent colicky pain and the abdomen remained moderately distended. On the ninth postoperative day the Miller-Abbott tube was passed and the tip entered the duodenum in 5 hours. On the following day flatus was passed, the abdomen was less distended, and on each of the subsequent 2 days the bowels moved. The tube was clamped off on the morning of the third day and it was removed that evening. The patient was dismissed from the hospital on the fourteenth postoperative day and she has since had no symptoms of obstruction.

*Case No. 3.* A male, 18 years of age, was operated upon at St. Vincent's Hospital on September 20, 1939, for acute recurrent appendicitis. Three months previously he had had acute appendicitis





and at operation elsewhere an abscess was encountered which was drained. He developed post-operative intestinal obstruction immediately following drainage of the appendiceal abscess, which was treated by Miller-Abbott tube decompression: with complete recovery and no recurrence of obstructive symptoms. At operation we found, in addition to the subacute appendicitis, many loops of small bowel which were densely adherent in the pelvis. A Miller-Abbott tube was passed into the stomach the afternoon of the day of operation, but it did not pass into the small bowel until 60 hours had elapsed. The tube traversed all of the small intestine during the following 24 hours and was removed on the fifth day. The patient was dismissed from the hospital on the eleventh post-operative day and has remained well since.

**Case No. 4.** A male, 67 years of age, was admitted to St. Vincent's Hospital on November 12, 1939, because of abdominal pain, nausea, vomiting and fever. His history consisted of increasing constipation for the past year; the stools contained blood. Bowel movements for the past week had been scant. The temperature was 102 degrees, the abdomen was distended and rigid, and there was evidence of fluid in the peritoneal cavity. The vomitus was fecal in character. The patient was dehydrated. The leukocyte count was only 4,400, and there were 61% neutrophils. A diagnosis was made of large bowel obstruction with generalized peritonitis, and a fatal outcome was predicted. Because it seemed highly improbable that the patient would withstand any operative procedure a Miller-Abbott tube was passed; 48 hours elapsed before the tube entered the small bowel. The patient was semi-conscious, a great deal of difficulty was encountered in advancing the tube, and decompression was unsatisfactory. Twenty-five hundred cubic centimeters of thin, brown fecal fluid were recovered the first 24 hours after the tube entered the small bowel and 1300 cc. during the following 24 hours. The patient expired 4 days after admission to the hospital. An autopsy revealed complete obstruction of the rectosigmoid by a ring carcinoma, marked distention and thinning out of the large and small bowel, and generalized peritonitis.

**Case No. 5.** A 68-year-old female was admitted to St. Vincent's Hospital on December 9, 1939, complaining of obstipation, small, painful, watery stools, colicky abdominal pains, and nausea and vomiting of 17 days' duration. During the previous year there had been two similar attacks, each lasting for several days. Constipation had increased after each attack and bowel movements had been painful. The patient had not seen blood in the stools, but members of the family had repeatedly observed blood in the toilet. Laxatives had increased the abdominal pain and the vomiting, and had been followed by frequent small, watery stools. The abdomen was distended and tense, there was marked tenderness in the left lower abdomen, and peristalsis was increased. There was a hard, doughy, irregular, fixed mass in the posterior culdesac,

which seemed to lie anterior to the rectum, but not to involve the lumen of the rectum. A clinical diagnosis was made of perforating diverticulitis of the sigmoid producing practically complete obstruction. A Miller-Abbott tube was passed, and 18 hours were required for the tube to pass into the small bowel. The tube traversed and decompressed all of the small bowel in the following 48 hours. During this time glucose and saline were given intravenously, and on December 12, 1939, the patient was operated upon, at which time she was in much better condition than upon admission to the hospital. A very extensive inflammatory mass was found in the pelvis, producing obstruction of the sigmoid, and a colostomy was made. The patient expired on the following day. At autopsy the findings were (1) multiple diverticula of the sigmoid, and (2) acute diverticulitis with pelvic cellulitis.

**Case No. 6.** A boy, 10 years of age, was operated upon at St. Vincent's Hospital 11 hours after the onset of abdominal pain with nausea, vomiting and fever. At operation the findings were those of a perforated, gangrenous appendicitis with diffusing peritonitis. Appendectomy was performed and drainage was instituted. Two days later symptoms occurred of spreading peritonitis with severe ileus. Levine tube suction was started and maintained for 2 days, during which time improvement did not occur. On the fourth postoperative day a Miller-Abbott tube was passed into the stomach and for the following 4 days all attempts to pass the tube into the small bowel were unsuccessful. The patient expired on the eighth postoperative day. Permission for an autopsy was not granted.

**Case No. 7.** A male, 33 years of age, was seen in consultation on January 24, 1940, because of symptoms and signs of acute small bowel obstruction. Operation had been performed 13 days previously for acute, perforated appendicitis with peritonitis. Following operation the treatment had consisted of Levine tube suction, intravenous fluids and neoprontosil. The abdomen was distended, the fever was 102 degrees, and the emesis was fecal in character. A Miller-Abbott tube was passed into the stomach and it required 40 hours to pass it into the small bowel even with the aid of fluoroscopic guidance of the tube. Fifteen hours after the tube was demonstrated to be in the small bowel the distention was less, the pain had subsided and there was marked improvement in the patient's condition. Twenty-four hours later a flat film of the abdomen showed the tip of the tube to be in the terminal ileum, decompression was complete and the patient had a bowel movement. The tube was removed 7 days after it was first passed into the stomach. The patient was dismissed from the hospital on February 15, 1940, with no further signs of obstruction.

**Case No. 8.** A female, 26 years of age, was seen in consultation on February 12, 1940, because of generalized peritonitis with severe ileus. The patient had been in the hospital for 3 days, during which time the distention had increased in spite of Levine tube suction. The history consisted of constant abdominal pain with increasing abdominal distention, nausea, vomiting and fever for one week previous to admission to the hospital. Harris flush and enemas had been productive of very little gas or fecal particles. The Levine tube was removed and the Miller-Abbott tube was passed into the stomach. The tip of the tube was proved to be in the small bowel in 5 hours. A great deal of difficulty was encountered in advancing the tube and the results were not entirely satisfactory. The patient vomited several times and it was necessary upon a number of occasions to pass a Levine tube into the stomach for the purpose of gastric lavage. However, neoprontosil was being given intramuscularly, and it was observed that the vomiting oc-

#### LEGENDS

1. Case No. 1: Five hours after the Miller-Abbott tube was introduced, showing the tip just entering the duodenum.
2. Case No. 2: Ten hours after the Miller-Abbott tube was introduced, showing the tube well advanced in the jejunum.
3. Case No. 4: Seventy-two hours after the Miller-Abbott tube was introduced, and twenty-four hours after it had passed beyond the pylorus. The tube buckled in the esophagus when it was advanced with force because of the absence of peristalsis.
4. Case No. 5: Sixty hours after the Miller-Abbott tube was introduced, showing the tip of the tube in the terminal ileum and complete decompression of the small bowel.
5. Case No. 8: Eight hours after fluoroscopic guidance of the Miller-Abbott tube.
6. Case No. 8: Thirty hours after the Miller-Abbott tube had passed beyond the pylorus with practically complete decompression of the small bowel.

curred shortly after the administration of this drug. Five days after the tube was introduced, decompression seemed to be complete, the abdomen was soft and not distended, gas was passing freely, there had been several bowel movements and the fever had subsided. The tube was removed on the evening of the fifth day, and the patient was dismissed from the hospital on February 24, 1940.

### DISCUSSION

Cases Nos. 1, 2, 7 and 8 prove the efficacy of tube suction decompression in intestinal obstruction. However, I feel that an error was repeated in each of these cases. Levine tube suction was instituted and maintained for a variable period of time and in each case this proved to be valuable time lost. I am of the opinion that the principle of early, adequate treatment should pertain to this method of management as rigidly as to the surgical management of intestinal obstruction and that when tube decompression is indicated, it should be instituted as early as possible.

In Case No. 3 the tube was used prophylactically because the patient had had obstruction of the small bowel 3 months previously, following drainage of the appendiceal abscess, and the condition of the small intestine at the time of the appendectomy was such that a repetition of the obstruction was probable. I believe that the use of the tube was justifiable in this case.

No. 4 is a borderline case. The patient had generalized peritonitis as the result of leakage through the obstructed, devitalized bowel at the time of admission to the hospital. Very probably the bowel was damaged beyond repair by the distention which had persisted for at least a week without treatment. It is doubtful whether an emergency cecostomy would have changed the course of events, and attempted tube suction decompression served only as a gesture. No. 5 is also a borderline case, but it would seem that decompression was beneficial in view of the fact that the decompression took place during the time when dehydration and chemical imbalance were being treated. The patient did not have generalized peritonitis as the result of the obstruction. Case No. 6 was entirely unsatisfactory because of failure to pass the tube beyond the stomach.

Before attempting to treat intestinal obstruction by intubation of the intestine, the type of obstruction must be ascertained as accurately as possible. An attempt has been made to classify intestinal obstruction according to the applicability to this method of management of the distention factor.

#### I. Tube suction decompression indicated in:

1. Non-inflammatory obstruction of the small bowel.
  - a. Simple mechanical obstruction.
  - b. Paralytic ileus.
2. Inflammatory obstruction of the small bowel.
  - a. Localized peritonitis with obstruction.
  - b. Generalized peritonitis with ileus.
  - c. Generalized peritonitis with mechanical obstruction of the small bowel.

#### II. Borderline cases:

1. Mechanical obstruction which has resulted in peritonitis.
2. Acute large bowel obstruction.

#### III. Tube suction decompression contra-indicated in:

1. Intussusception.
2. Strangulation obstruction.
  - a. Volvulus.
  - b. Strangulated hernia with obstruction.
  - c. Adhesive strangulation obstruction.
3. Mesenteric thrombosis.

Cases falling into group I may be safely decompressed and in many of the instances the obstruction will be permanently relieved. In some cases surgical release of the obstruction will be necessary, but it may be done with a great deal less risk after the bowel is decompressed and the acute process has subsided.

Group II-1 comprises borderline cases. It is probable that intestinal intubation offers very little in these cases, but it is generally known that surgical measures are also often futile, and that the mortality rate will approach 100%.

The cases in group II-2 are also borderline at the present time. Although surgical attack upon the obstructing lesion must be made in practically all of these, it is my opinion that in many instances the patient will be materially benefited by decompression while the usual rehabilitation measures are being carried out, provided valuable time is not lost in passing the tube.

All of the cases in group III are definitely acute surgical emergencies and should not be treated by intestinal intubation. Should one institute this method of decompression when question exists as to the nature of the obstruction and subsequently decide that the obstruction is of the strangulation type or one in which the vascular integrity may be jeopardized, the patient should be operated upon immediately.

The differential diagnosis of the various types of obstruction is often difficult. However, Wangenstein<sup>4</sup> has pointed out that careful interpretation of clinical observations will usually aid one in arriving at a correct diagnosis. When an error is made it usually is one of interpretation of the observations. Pain in the cases falling in group III usually is severe, constant and localized. There may or may not be a palpable mass. Localized tenderness is a most important symptom and it must be carried in mind that in a patient suspected of having obstruction in whom definite localized pain and tenderness are constant, more than a simple mechanical obstruction usually exists.

Tube suction decompression has proved to be a valuable adjunct in the management of the distention factor in certain types of intestinal obstruction. It is essential, first of all, that one master the various methods under variable circumstances of intubating the intestinal tract. In order that one may obtain the most satisfactory results following suction decompression, the diagnosis of in-



testinal obstruction must be made early. The percentage of good results following its use will depend upon the judicious selection of cases, adherence to the principle of early diagnosis and early treatment, and careful, patient supervision of the entire procedure.

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## Spinal Injuries with Nerve Damage

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THE proper care of spinal injuries at the scene of the accident is vitally important because of the possibility of spinal cord or spinal nerve damage. Over-enthusiastic bystanders may cause severe and occasionally fatal injuries simply by poor handling of the patient. Therefore, the importance of proper, careful handling of the patient cannot be over-emphasized.

Fractures of the spine are usually the result of hyperflexion injuries, such as those sustained in automobile collisions, falling in the sitting position, etc. In such accidents, the spinal cord and nerves are damaged by pressure of the laminal arch against the lower vertebral body, by fractures and dislocations, or by any combination of these injuries. Depending on the severity of the injury, the spinal cord and nerves may be compressed, contused, lacerated or completely severed.<sup>1</sup>

#### FIRST AID

The proper first aid care of these patients is vital. After the patient is treated for pain and shock, he can be moved if three important postulates are remembered: (1) to take plenty of time; (2) to gently extend and fix the spine, and (3) to use gentle traction on the head, especially in cervical lesions (Figs. 1 and 2).

Hyperextension of the thoracic and lumbar spine (Fig. 3) while the patient is being transported may be accomplished by carrying the patient face downward in a blanket or by carrying him face downward, supporting his shoulders and feet. Twisting the spine must be avoided because of the possibility of further cord damage.<sup>2</sup>

Morphine can be used to relieve pain if it does not interfere with the neurological examination.

Shock should be treated by warmth, fluids and blood transfusion. Carelessly applied hot water bottles or electric pads should not be used on the

patient because he is already anesthetic and may be easily burned.

#### ESTIMATION OF INJURY

An immediate estimation of the severity and location of the level of the spinal lesions is important both from the medico-legal and therapeutic standpoints. This record should be made in writing so that it may be easily referred to later.

Such an estimation can be carried out briefly in the following manner:

1. Ask the patient to move his hands and feet gently.
2. Observe the skin area involved in sweating and gooseflesh, as this will usually correspond to the sensory level of the lesion.
3. Observe and record the sensory level, reflexes, motor power and level of pain.
4. Pinch the great toe. If there is no sensation, the spinal cord is probably completely severed.
5. Note any angulation of the spine.
6. Examine the back of the throat for any evidence of forward dislocation of the first four cervical vertebrae.
7. Do not press upon the spinous processes, since there is danger of producing further nerve damage.
8. X-ray the patient in the position of hyperextension and never hesitate to x-ray the entire spine if the first examination is not satisfactory.<sup>3</sup>

After all necessary emergency treatment has been given and the patient is as comfortable as possible, a more complete neurological examination should be performed. This will help to answer the question, "Will the patient ever walk again?" and will indicate the lines for further treatment. This may show a completely or partially severed cord:

(a) When the spinal cord is *completely severed*, there will usually be three stages of symptoms. First, during spinal shock, the muscles below the lesion will be paralyzed, toneless and flabby, all reflexes will be absent, and there will be a retention of urine and feces. Second, during the stage of reflex activity, the extremities will be spastic and respond to painful stimuli by a massive flexor spasm. The filled bladder will be evacuated, and occasionally sweating in the paralyzed area, pri-

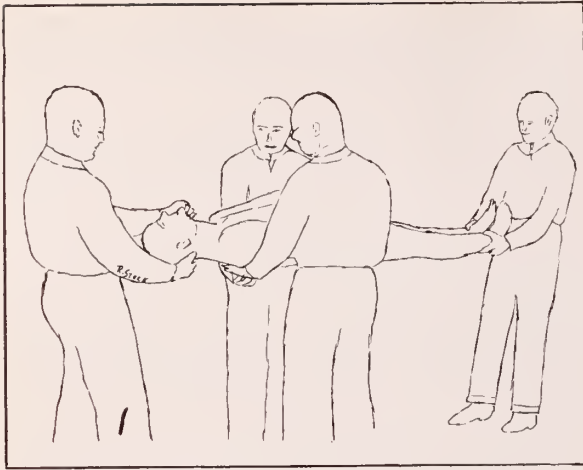


Fig. 1. Carrying patient with broken neck.

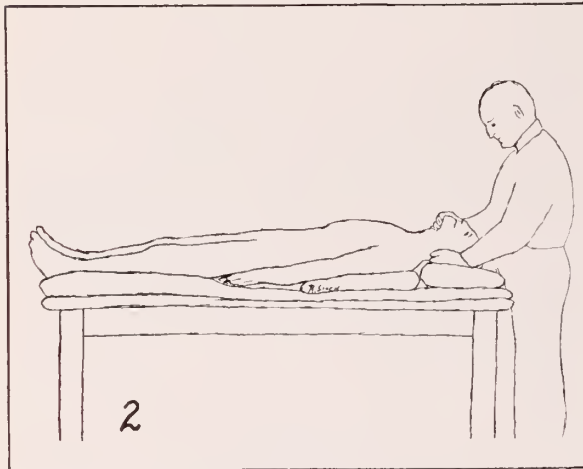


Fig. 2. Fixation of cervical spine in hyperextension with gentle traction. Pillow under the shoulders and sandbags at the sides of the head.

apism and ejaculation may take place. The third stage, which is similar to the first period of shock, develops as a terminal event, or if debility or a severe infection set in.

Absence of deep pressure pain in the great toe is evidence of complete irrecoverable sensory and motor loss. Because the nerve tracts carrying periosteal or deep pain sense from the great toe to the brain in man are located in the central portion of the spinal cord, deep pressure pain in the great toe is not likely to be lost except in severe injuries to the spinal cord.<sup>4</sup>

(b) If the spinal cord is *compressed* or *contused*, varied symptoms may be present; paralysis of muscles below the lesion will be partial, and sensory loss may be incomplete. Deep pressure pain in the great toe will not be lost, and the extremities will respond to painful stimuli by an extensor response. In bed, the patient may lie in hyperextension. Movements in response to pain will be incoordinate and spastic. The Babinski sign may appear early after the injury, and the massive reflex response will not be elicited. A very short period of shock or none at all may be present. Furthermore, the paralyzed extremities will possess some tone and function, and the anesthesia will not be complete.<sup>5</sup>

#### LEVEL OF SPINAL INVOLVEMENT

The approximate spinal level may be ascertained rapidly if these facts are remembered:

(a) Damage at the level of the first or second cervical segment may produce an early loss of consciousness, stertorous, irregular and shallow breathing, and rapidly lead to death.

(b) Damage at the level of the third or fourth cervical segment may produce a respiratory difficulty and asphyxia, the result of inability to expand the chest. Loss of consciousness is late; these patients may live for weeks or months.

(c) With injuries at the fourth cervical segment, the deltoids, biceps, brachialis and supinators are paralyzed, the patient will lie in bed with his arms abducted, his forearms flexed and rotated outward.

(d) The muscles involved when injuries are at lower spinal levels are as follows: fifth cervical, deltoid; sixth cervical, biceps; seventh cervical, triceps; first to eighth thoracic, the corresponding intercostal muscles; ninth and tenth thoracic, the upper abdominals; eleventh and twelfth, the lower abdominals; second to fourth lumbar, the adductors of the thighs; and fourth lumbar, the dorsiflexors of the foot.

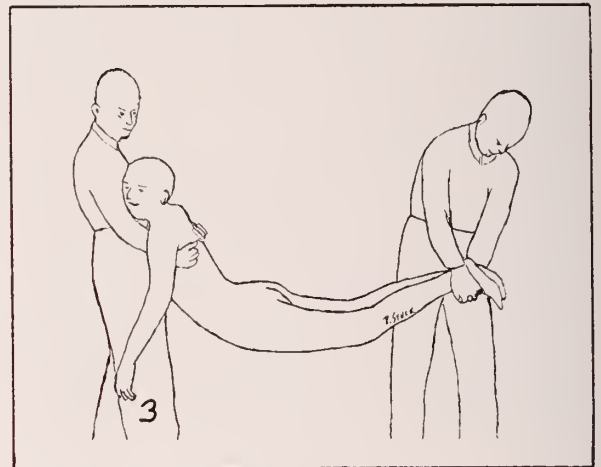


Fig. 3. Fractures of the lumbar spine should also be carried in hyperextension.

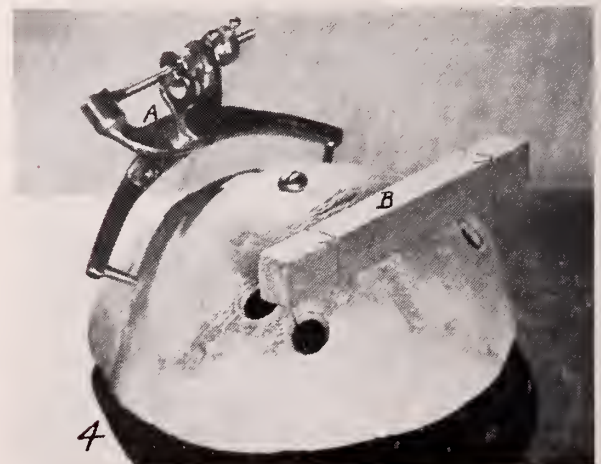


Fig. 4. A Crutchfield skeletal traction tongs.  
B Hoen skeletal traction wires.



All of the above details cannot be remembered at each examination, but the recall of a few general points will assist in the localization. In cases of transection of the cord in the cervical region, an extreme hyperthermia is usually present, due to a paralysis of sympathetic nerves with a loss of sweating and conduction of heat from the body. The level of sensory and motor loss, of course, aids in the location of the lesion.

Impairment of chest expansion below a definite level with an associated sensory loss below this level indicates a thoracic lesion.

Sensory, motor and reflex responses will localize the lesion at any level.

The site of the pain, the contusion to the back, the spinal deformity, the position in which the patient is found, and the x-rays are all important in localizing the lesion.

#### TREATMENT

Shock, when present, should be treated in the usual way by application of warmth and injection of fluids, including blood when necessary.

As a part of the routine neurological examination, a spinal puncture should be performed. Blood in the spinal fluid is evidence of subarachnoid hemorrhage; and an increased number of white cells, meningitis. Xanthochromic spinal fluid or clear spinal fluid with an increased protein which clots on standing indicates a partial or complete spinal block. The Queckenstedt test is most satisfactory in the thoracic and lumbar lesions. In cervical lesions, it is not advisable to use the Queckenstedt test with manual jugular compression because such manipulation may further dislocate the spine and injure the cord; the Grant method of putting a blood pressure cuff about the neck to produce compression is preferable and safer.<sup>6, 7</sup>

#### EMERGENCY CARE

Patients should first be placed in a position of hypertension with traction. In cervical lesions, the early application of skeletal traction (Fig. 4) will save many lives. I prefer the Crutchfield skeletal traction tongs because of their ease of application and their small size.<sup>8</sup> Hyperextension and fixation of the thoracic and lumbar spine are easily accomplished with the hyperextension frame or body cast.

Where there is already evidence of nerve damage or cord compression, any manipulation of the spine under an anaesthetic is dangerous. Such a procedure may permanently paralyze or kill the patient.

Laminectomy should be performed immediately if spinal cord or spinal nerve compression can be demonstrated or if there is a progressively increasing paralysis.

#### DELAYED LAMINECTOMY

If no spinal cord or spinal nerve compression can be demonstrated or if no increasing paralysis appears, laminectomy may be delayed several hours. If the neurological examination is repeated frequently, a progression of symptoms may be discovered and indicates immediate operation. Occasionally, however, the patient may show progressive improvement simply with hyperextension, traction, and fixation of the spine. When conservative meth-

ods have failed, laminectomy should be performed at any time that there is a question of spinal cord or spinal nerve compression.

#### LATE LAMINECTOMY

Laminectomy should be done even a week or more after the injury if spinal cord or spinal nerve compression can be seen to be present. A week or more after an injury, evidences of compression are (a) x-ray changes in the position and condition of the vertebrae, (b) spinal block as demonstrated by the Queckenstedt test, and lipiodol or air injection, (c) increased protein in the spinal fluid, and (d) the neurological findings.

#### OPERATIVE PROCEDURE

For their surgical treatment, patients should be kept in hyperextension with traction as this position results in the least possible damage to the nerve structures. The operation is frequently performed most satisfactorily under local anesthesia, which minimizes surgical trauma. The surgical procedure should entail laminectomy with removal of all compressing structures: bony fragments, torn ligaments, and hemorrhages. Hemorrhages within the substance of the cord should be identified and aspirated to avoid herniation of the cord. If the cauda equina or any spinal nerves have been severed peripheral to their ganglia, they should be repaired as any other peripheral nerve. When one or two spinal ganglia have been crushed, it is usually best to sever their posterior nerve root certainly in order to prevent post-traumatic root pain.

#### POSTOPERATIVE CARE

Adequate nursing care should be provided. Attention should constantly be paid to sudden rises in temperature, distended or infected bladders, and skin ulceration.

The care of the bladder is an important problem. Formerly, the retention catheter with occasional changing and frequent irrigation was used. With the new tidal drainage method of Munro,<sup>9</sup> the old bladder infections are done away with and bladder tone is maintained. With this method available, suprapubic drainage is now indicated only in severe bladder infections.

The decubitus ulcer may be prevented by frequent turning of the patient, frequent changing of the linen, especially when soiled, and the use of such mattresses as the beautyrest. Keeping the skin clean, dry and oiled if it is too dry, and using sheets that are clean, smooth and unstarched will help to prevent the formation of ulcers. When hot water bottles are used they must be well protected for they may burn the paralyzed patient and initiate an ulcer.

Well-instituted physiotherapy will prevent contractures and wasting of muscle groups until their function returns.

The extent of rehabilitation of these patients is proportional to the interests of the doctor and the family. Except in high cervical lesions, there are

usually jobs that these patients can perform if they are adequately taken care of in the meantime.

### CASE REPORT

C. P. A., male, age 36, referred by Dr. R. S. Johnston, of La Junta, Colo. He gave a history of an automobile accident on the first of September, 1938. He was unconscious for several hours, and confused and amnesic for 3 or 4 days. In the accident, he received injuries to his head, chest, right arm and right leg. As he began to clear mentally, he complained of headache, diplopia, weakness of the left upper extremity and slight left deafness.

The neurological examination revealed a patient sluggish in his responses, indifferent and unconcerned about his condition. There was a diminished sense of smell on the right, bilateral N VI weakness, increased deep reflexes on the left, absent abdominal reflexes, and sluggish cremasteric reflexes. The sensory examination showed a hyperesthesia on the right side of the body. Motor power showed the right grip 90 and the left 20.

At this time it was suggested that the patient had a subdural hematoma, and bilateral trephines were recommended. However, as the patient was improving, it was decided to delay treatment.

On October 14, 1938, examination revealed a wasting of the left upper extremity, a diminution of pain sense and heat and cold below the shoulder on the right and in the cervical region on the left, with pain in the left upper extremity. X-rays of the skull were essentially negative.

On October 17, 1938, x-rays of the cervical spine showed a slight forward dislocation of the fifth and sixth cervical vertebral body and a partial crushing of the sixth intervertebral disc. The right pedicle of the fifth cervical vertebra showed a mild separation.

Lumbar puncture revealed no evidence of block. Skeletal traction was advised for the relief of this dislocation and nerve compression. The Crutchfield skeletal traction tongs were applied October 24, 1938. In about 48 hours all pain ceased in the left upper extremity, and an x-ray of the spine showed the vertebra in good alignment. This traction was maintained for two weeks, and then the Forrester collar applied. The latter treatment was not satisfactory, and an orthopedic consultant recommended and applied a Minerva jacket on December 31, 1938. Two weeks later this was bivalved and a form was made for a celluloid jacket; 10 days later the latter was applied.

Since the application of the cast following the traction, there has been no recurrence of the pain in the left upper extremity, and there has been a progressive improvement.

### SUMMARY AND CONCLUSIONS

1. It is reiterated that all cases of spinal injury must be handled carefully at the scene of the accident to prevent needless nerve damage.

2. An estimate of the severity of the patient's nerve injury can be made briefly at the scene of the accident by following the plan of examination suggested. Such a record is valuable both medicolegally and prognostically.

3. Any neurosurgical procedure is indicated only after a careful examination with particular reference to the neurological findings.

4. Laminectomy for relief of spinal cord or nerve compression is indicated with: (a) Progressive paralysis. (b) X-ray evidence of spinal cord or spinal nerve compression. (c) Spinal block as shown by the Queckenstedt test, by increased spinal fluid protein, and by spinal air or lipiodol injection.

5. Proper nursing care will prevent the usual complications of bladder infections and decubitus ulcers.

6. If sufficient interest is shown in the well-being of patients afterwards, jobs can be found for them and many rehabilitated.

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## Treatment of Inflammatory Lesions by Radiation

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THIS paper is primarily a report of results of x-radiation treatment of gangrene. During the past two years twelve cases of this particular malady have been so treated in our offices. Ten of these recovered and two died. The deaths will be discussed in more detail. Five of these cases had amputation as well as radiation. In two of these amputation was performed because of the trauma incident to their initial injury and one of these was so treated while receiving x-ray treatment.

The remaining three were treated for gas gangrene in an amputation stump. It is presumed that amputation in all these cases was done because of tissue destruction and not as a therapeutic procedure for gas gangrene. Most of these cases are among transients who were injured in accidents involving freight trains, public highways, etc., all of which are potential sources of gas bacillus infection. It is obvious that in the cases in which gas gangrenous stumps were treated if the amputa-



tions were performed as therapy for gas gangrene the treatment failed because the disease was still present and was not eradicated until the x-ray treatment was given.

All the cases received anti-sera in prophylactic dosage along with tetanus anti-toxin. One got mixed gas bacillus serum in therapeutic dosage. In this case it is interesting to note that his temperature was normal on the day following x-ray treatment. On that same day he received the serum, which was followed by a moderate reaction and temperature elevation with the usual chain of serum sickness events, lasting about seven days. From our own limited experience with this dozen cases, together with that of others with more than 140 cases, it would seem that the value of serum, either for therapy or prophylaxis, is highly doubtful. Many, many cases of proved gas gangrene have been cured with radiation alone. Tetanus anti-toxin, of course, should be given as indicated.

Two of our cases died. One was so severely injured that his death might be attributed to shock and trauma. His arm was amputated at the shoulder by his initial injury and he had bled profusely before being hospitalized. Gas was present beneath the skin of the entire upper trunk on one side. He was treated with a radiographic machine which could not produce sufficiently penetrating rays for effectiveness in the trunk. He was treated both in the morning and again the same evening. The second death occurred in a middle-aged man who had a gunshot wound in the upper thigh. He developed his disease on the second day and was radiated both on the affected area and above the inguinal ligament. He died promptly. Both these cases were large men. Both were radiated with hospital diagnostic x-ray machines that have been calibrated for superficial therapy. It is possible that neither received adequate treatment inasmuch as with a peak of 50 kv. and 2 Al. filtration the effective dose much below the surface would be small. At least one of these cases (the latter) might have been salvaged.

For many other infections the value of x-ray therapy is well known, though not as widely practiced as is warranted. Among the commonly seen infections in which x-ray treatment is of proven value are: boils, carbuncles, warts, erysipelas, acne, ringworm, certain cases of sinusitis, sometimes acute mastoiditis. It is specific for erysipelas. The panacea, sulfanilamide, and its derivatives, of course, produce good results too. But they cannot be given indiscriminately with impunity, as is being brought to attention by the few cases of blood disturbances now being reported. Also about 10% of all persons taking either of these drugs react in some unfavorable manner. There is absolutely no risk from a properly applied dose of x-ray in amount sufficient to control most superficial infections, especially gas gangrene.

We have treated several cases of chronic sinus infection. Results have so far been indifferent. All had had long and varied treatment, including

surgery in some cases. Five of them were improved by radiation. The sixth is uncertain and is still taking treatment. One patient, a boy of 12 years, has been completely relieved from asthma for more than a year and is at present well. Relief of pain is the greatest service done these patients. While every case of sinus infection is not suitable for radiation a few are and these should have the benefit of a trial.

It must be emphasized that the efficacy of radiation in the control of infections depends entirely upon the alacrity with which it is applied—the earlier the better! Most infections in the classes here discussed can be surely controlled when radiated within a few hours of onset. Both gas gangrene and erysipelas should be treated as emergency measures! Boils and carbuncles, especially when on the head and neck, should be radiated without delay! Advanced infections are more or less self-limited, depending on drainage and cleanliness for healing, and radiation is of limited, though some value.

The technique followed by us is mostly with 120 kvp. and 5 ma. Filtration varies but mostly is from 1 to 3 mm. al. For cases of gas gangrene involving heavy structures such as the thigh and trunk we have used 200 kvp. and 0.5 cu. + 1 al. filter. Dosage is usually 100 to 200 r. (measured in air) and is repeated in 12 to 24 hours, depending upon the condition and response of the patient. When the temperature is normal treatment is not usually repeated before a rise. We have found that 200 kvp. and 120 kvp. are of equal value in the treatment of gas gangrene.

Just what happens when x-rays are applied to tissue diseased by infection is not definitely known. Many theories have been advocated but none substantiated beyond refute. None of them will be discussed here. As far as infections are concerned the use of radiation is empirical, *but it does work*. In the case of gas gangrene it works when nothing else will.

Why then, is it not good medicine in any infection that is potentially dangerous, such as gas gangrene and erysipelas, carbuncles, boils, etc., to treat them with radiation as prophylaxis? There is no risk and delay until one's suspicions are confirmed is a loss of valuable time. Immediate treatment is cheap and may keep the problem that of treating an infection rather than heroically trying to save an already jeopardized life.

#### CONCLUSIONS

1. X-radiation is a specific for gas gangrene and erysipelas.
2. Early treatment is essential and should be repeated when necessary.
3. Prophylactic x-radiation of potentially dangerous infections is cheap and without risk.
4. Amputation is *not* a therapeutic procedure for gas gangrene.

## Treatment of Cancer of the Breast by Combined Irradiation and Operation

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THE following plan for treatment of cancer of the breast and the ideas on which it is based are presented with some hesitation, realizing that they are open to criticism and that the ultimate results of treatment of mammary cancer have been anything but encouraging. However, I do not beg indulgence, but rather criticism; I am quite open to conviction that I am wrong, even though the results, both good and bad, of this method and observations on the nature of the recurrences seem to indicate that its basis may be correct.

With one statement, I think, you will agree, viz., that surgical attack on cancer has reached its anatomical limits and that it is futile to expect better results by more extensive removals of areas of lymphatic drainage. I do not know whether you will agree to the converse, which I think holds good not quite so certainly, but fairly well, for many cancers, viz., that many very extensive operations have not proved justifiable; that if the cancer has already spread into the lymphatics extensive operations are futile, for we cannot get ahead of this spread; that if it has not spread into the lymphatics they are unnecessary, for a more local, decently wide excision will accomplish a cure. There are some abandoned procedures that speak for the correctness of this statement. For instance, the Wertheim operation for cancer of the cervix and the extensive Halstead operation for cancer of the breast, with wide excision of the skin and Thiersch grafting. Extensive abdominoperineal operation with permanent colostomy for cancer of the rectum frequently falls into this category.

It may be well to outline the details of the method before discussing the results. Needless to say, the patients have all been examined from head to foot and have been questioned with care. Those complaining of rheumatism or pain in the back have had x-rays of the spine and pelvis; the others have had chest films, the cost of a complete bone survey being too great for most patients. Internal metastases, lenticular nodules in the skin and carcinomatous strands in the skin lymphatics have precluded operation, except occasionally as strictly palliative operations for four fungating tumors; the presence of palpable supraclavicular glands has usually, but not always, been held as a contraindication to operation. Those patients who were chosen for operation have been subjected to very moderate preoperative irradiation of the mamma, the supraclavicular region and the axilla, each field receiving approximately 600 to 900 roentgen units,

or some 1800 in all, with some overlap from the separate parts. Treatment has been given usually in four, sometimes three, sometimes five sessions, mostly by the late Dr. Rehfish and Dr. Garland, who have been liberal enough to give up their own ideas of what was best in order to fall in with the general plan of treatment. One-fourth grain of phenolbarbital was given three times a day to prevent occasional slight nausea; the patients were ambulatory and not at all upset during these short preparatory x-ray sessions.

These treatments were not given with an idea of influencing the cancer itself, for they were confessedly quite inadequate as cancer treatments, but rather of sterilizing prophylactically the more distant fields into which the proposed operation might scatter cancer cells.

James B. Murphy and his co-workers of the Rockefeller Institute showed in a series of papers published some 20 years ago that implants of mouse tumor refused to grow in skin that had been previously subjected to mild doses of roentgen irradiation, while similar or heavier doses applied to the excised tumor itself not only did not prevent its growth when reimplanted, but if anything caused it to grow more rapidly. This destruction of cancer implants seemed to accompany the lymphocytic infiltration that follows after irradiation; the destruction was most marked when implantation was done at the height of the roentgen reaction, i. e., about a week after irradiation. It is true that their experiments held good only for intracutaneous implants and that irradiation had no such effect when implantation was done into the subcutaneous tissues. However, it seems as though if previous irradiation protects the skin against cancer implants and if this protection is due to a lymphoid reaction, that irradiation of other lymphoid tissues (the lymphnodes) may excite their defenses in the same way. It was thought, with these experiments in mind, that cancer cells lying free in the lymphatics might land in sterile soil if they were scattered and caught up in the lymphnodes during operation and might refuse to grow. Perhaps this same irradiation may even be sufficient to keep within bounds minute deposits of cancer cells in more distant glands and lymph spaces, supraclavicular and mediastinal. It was only mild doses (one erythema dose) that protected against cancer implants in Murphy's experiments. Heavier doses broke down the defense and rendered the animals more susceptible.

Soon after conclusion of the roentgen sessions, usually the next day, at any rate within a week, the patient is admitted to hospital for operation. She is given sodium amytal, 6 grs. by mouth one

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hour and M. S. gr.  $\frac{1}{2}$ , hypodermically a half hour before operation and is operated upon under nitrous oxide anesthesia. Cyclopropane and ethylene are not used on account of the danger of explosion. An adequate, but not an immoderate amount of skin around the tumor is circumscribed with the electric knife; the nipple, of course, is included. This elliptical, or round, or polygonal incision, as the case may be, is prolonged by adding three limbs to it, two running downwards medially and laterally, and one upwards toward the clavicle. The skin flaps outlined by the three limbs are reflected by retracting them with sharp clawed retractors or towel clips and rapidly burning through the subcutaneous fat with a hot Percy cautery. They are held reflected by clipping them to the surrounding drapes or the skin with towel clips. From now on all dissection is done with a massive Percy cautery.

The cautery is used with the idea that its heat may destroy not only cancer cells with which it comes in contact, but also those at some distance from it. It has the additional advantage of making the operation practically bloodless. Visible vessels are dissected with it and severed with it between two mosquito clamps; minuter ones do not bleed and need no ligation. It has, as Voldmann said of his sharp spoon-curette, human intelligence. In distinction to the electric knife, which burns a hole into any large vessel it touches, the Percy cautery may be used with impunity in dissecting out the auxiliary vessels and removing their sheaths. It will not perforate them unless while burning off the sheath one includes the vessel wall in the tissue forceps and pulls it out into a teat, nor will it cause a thrombosis. It will not damage the nerves unless one burns them too long and persistently, when it may cause a painful neuritis. In short, it makes an ideal dissector provided one is always mindful that it is gentle retraction of the tissues that causes the heat to cleave them, and does not attempt to burn them through by main force, or by the weight of the instrument itself.

Once the skinflaps have been outlined dissection is begun by freeing the edge of the pectorals. For the last few years these muscles have not been removed, but have been freed of their overlying fat and fascia with the cautery, the surface being rapidly seared with the flat side and the hilt of the instrument. It was thought that the incidence of massive edema and elephantiasis of the arm and hand might be lessened if the pectorals were left; and indeed, excessive swellings have not occurred since leaving them. It was thought, on the other hand, that leaving them was justified, provided the axilla could be adequately reached, for recurrences in the muscles themselves are practically unknown. In fat women or in difficult dissections the lower portion of the major pectoral is removed, the upper part being allowed to remain. After the pectoral edge is free, dissection proceeds from above downward. The axillary nerve-vessel bundle is at once exposed with the cautery and every small vein and

artery branch carefully dissected, clamped close to the vessel and severed between two clamps. With the upper row of clamps as a retractor the vein is gently lifted up or dissected, small arterial branches are similarly freed and severed. After the vessels are clear, dissection is rapid. The axillary fat drops away in front of the cautery almost by itself. The long thoracic nerve and vessels are excised if the axilla appears at all suspicious; if not they may be dissected free and allowed to remain. The intercostohumeral nerve anastomosis receives attention and is examined for the presence of suspicious infiltrates. It is excised with the cautery. After the axilla is clean the breast with the axillary contents attached is lifted up gently and rapidly freed from the rib cage with the cautery and removed. The wound is then carefully revised, the axilla gone over and superfluous fat that may have been left on the skin flaps removed with the cautery. If now the axillary glands have been involved, or if suspiciously friable tissue has been found, extending along the intercostohumeral anastomosis into the chest, or upwards under the clavicle, the reflected skin flaps are protected with sheet lead. The wound is covered with moist compresses and the patient is taken to the x-ray room, where the operative wound is subjected to a wide field of heavy irradiation, either unfiltered or delivered through 1 mm. of aluminum at about 33 cm. target distance. From 2500 to 3500 R. are administered. The ray is centered toward the areas that appear most suspicious; medially, if the intercostal anastomosis was suspicious, or more upward if supraclavicular extension seemed more likely. This treatment takes about 12 to 18 minutes with the equipment at hand. During it anesthesia is discontinued; the previously administered sodium amylal and morphine are enough to keep the patient asleep.

This heavy intraoperative irradiation, used in cases with demonstrable axillary involvement, has an intent quite different to that of the mild preoperative course. Preoperative treatment is given with the idea of making the fields into which cancer cells may likely be scattered during operation unfit for their future growth. It is kept moderate in order not to break down the lymphoid defense and not upset the patient. It is not prolonged, so that the territory in which one is to operate may not be scarry and stiff and likely to break down later. The massive dose delivered during operation is sufficient, in theory at any rate, to kill cancer cells traversed by it; it is a dose much heavier than one would dare give at one time through the skin. It is purposely made as heavy as time and the apparatus at hand will permit. Necrosis and sloughing are not to be feared; fascia, muscle, nerves, vessels that fall into the field are notoriously resistant to x-ray necrosis; the skin is kept shielded and out of the way. Even though aseptic necrosis may occur in the deeper soft parts later, these are protected by normal skin from ulceration and sloughing.

This portion of the operation is considered essential in patients whose axillae are suspicious; when it is concluded they are returned to the operating room; the skin edges, which had been severed with the electric knife, are excised with a scissors or a scalpel, tabs of subcutaneous fat, which had been seared with the Percy cautery, are removed with the scissors and the wound is closed with silkworm gut and silk, or skin clips. A split Dakin's tube is inserted into the axilla through a small separate stab, or through the lower part of the original incision. A firm dressing of absorbent cotton is held in place with adhesive or with elastoplast. The large skin flaps are poorly nourished and heal more or less like a full thickness graft. At times, if the cautery has come too close to the skin, a small, round aseptic eschar forms at one place or another; rarely does it exceed a 25-cent piece in size. Occasionally a small Thiersch graft or pinch graft has been used to hasten healing of this area after the eschar has separated. Usually it has healed by itself.

The operation is not unduly lengthy; 1½ to 2 hours are usually sufficient, including the time of irradiation, during which gas anesthesia is stopped; there has been no sepsis or extensive necrosis following it; patients are usually up in 4 or 5 days and out of the hospital in a week or so.

#### POSTOPERATIVE TREATMENT

The drain is removed in 3 or 4 days; the rest of the dressing remains for about 10 days; the last sutures at the junction of the three branches of the incision, where there is considerable tension, are not removed for 2 or 3 weeks. If they are removed early the wound may part. Removal of the intervening sutures is begun in 8 or 10 days; a few of these are allowed to remain until there is no more tension on them.

The wounds have all been closed without free grafting; at times, it is true, under considerable tension. We have felt, as Scott says, that cases that cannot be closed without skin grafting are rarely suitable for operation. Lenticular metastases and carcinomatous lymphangitis of the skin have been considered as contraindications. No matter how widely such patients may be flayed, enough skin cannot be removed to prevent cutaneous recurrences.

You will note that although no wide areas of skin were removed at operation, the percentage of local recurrences has been very small. Most of the deaths were due to distant metastases in the bones, the pleura, the lung.

The absence of skin recurrences or lenticular metastases even in patients whose cancers reached the corium has fully borne out Murphy's experiments on the value of skin irradiation as a protection against implants.

Not only the skin but other areas of lymphatic tissue seem to have been protected by this pre- and intra-operative irradiation. Thus several patients were found to have metastases in the higher cer-

vicular lymphnodes, lying above the irradiated field, while the closer original nodes (supraclaviculars) remained free.

Death has been due to pleural and pulmonary metastases and especially to distant bony metastases, against which the x-ray offers no protection.

A patient now dying of recurrence, 6 years after operation, has a massive intrathoracic carcinoma, filling half the chest; this has grown out from the inside out, but the skin itself and the chest in various places and has pierced the skin axilla, which was subjected to heavy intraoperative irradiation, have remained free.

You will note that postoperative irradiation has not been mentioned. It has seemed to me that it has no value, except for the relief of pain in osseous metastases. It failed to check the growth of recurrences in lymphnodes of patients in whom it was tried; it seemed rather to accelerate the rate of growth, to make the patients needlessly sick and to hasten their end. It does, however, relieve the pain of bony metastases and apparently hold them in check for long periods—years. The dosage for bone lesions is small, 500-1000 R. Higher doses, I think, break down the defense, as they did in Murphy's mice, rather than afford relief; when small doses have proven ineffectual larger ones have been equally so; nothing has been gained by increasing them.

There have been a few deviations from this plan, which has been constantly followed for 20 years. In a very few patients with small localized nodules, mostly medical women, doctors and medical personnel, I have ventured to excise the tumor locally, not removing the whole breast, because these patients were so terrified at the thought of having cancer that they would not have submitted to operation at all had they thought they had one. Two have remained well, one has skeletal metastases. The axillary lymphnodes have remained free, but she has enlarged cervicals at the level of the thyroid. It is too soon to recommend local excision; in some instances, however, the local excision of small isolated nodules not over 1 cm. in diameter, preceded immediately by a moderate course of irradiation, may be justifiable. These small cancers are often encountered after a mistaken diagnosis of benign tumor and have had on preoperative treatment. A moderate course of postoperative irradiation is then in order.

#### SUMMARY

A method for treatment of breast cancer is described which includes:

1. Preoperative radiation of the breast, axilla and supraclavicular regions.
2. Removal of the breast, dissection of the axilla with a Percy cautery.
3. Intraoperative delivery of a heavy dose (2500-3000 R.) of unfiltered or lightly filtered x-ray to the open wound for cancers suspicious of axillary involvement.



## Extra-Diabetic Uses of Insulin

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and

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WITHIN recent years medical literature has carried reports of great interest concerning the use of insulin in such conditions unrelated to diabetes mellitus as the psychopathic states and malnutrition. We, in the general practice of medicine, have frequently observed in our diabetic patients how often such complications as "colds," infections, skin disorders, pneumonia, and even early gangrenous tendencies have been favorably affected by proper insulin usage. This latter observation caused us to wonder if there were not some bases for the use of insulin in somewhat similar conditions in the non-diabetic. We, therefore, set forth to search the literature with this point in view, and we were indeed amazed to find the overwhelming favorable reports within recent years. The following is a brief resume of our findings.

### PSYCHOPATHIC DISORDERS

Crowley<sup>1</sup> describes four psychiatric conditions in which insulin has proven to be a valuable therapeutic adjunct: schizophrenea, depression states, acute alcoholism, and drug addiction.

To Dr. Manfred Sakel<sup>2</sup> of Vienna, we are indebted for the development of this method for schizophrenia. He first reported its use for this condition in 1933 after finding that insulin benefited the mental and emotional states of drug addicts. He reported 70% to 80% complete remissions with early cases of schizophrenia as compared to the spontaneous remissions rate estimated variously at from 25% to 50%. The insulin shock treatment is most effective in early cases such as those revealing symptoms of less than one year's duration. The response of the paranoid and catatonic types are most gratifying.

Freudenberg<sup>3</sup> describes the mechanism of cure in the schizophrenic by stating that insulin therapy induces the oxybiotic processes necessary for detoxification of the toxic products which collect from protein metabolism as a result of a primary disturbance in cerebral respiration due to some lack of oxygenating substances. It is also stated that insulin may irritate the nerve cell membranes which result in an increased exchange between the cells and their surroundings.

In acute alcoholic intoxication<sup>1</sup> insulin given early will cause the patient to "sober up" immediately with practically no "jittery" feeling. Robinson's report<sup>4</sup> of nine cases reveals that this is an extremely effective mode of therapy for acute alcoholism. He states that within 7 hours after the onset of treatment there was a marked clearing of symptoms of hallucinosis, delusions, disorientation, and mania when present. Insomnia disappeared and the first dose caused considerable degree of hunger and the patient will readily take

fluids and nourishment. The dosage recommended was U xx, repeated in 3 hours. Orange juice was kept at the bedside to overcome untoward reactions. The average length of time from administration to complete resolution was 3.3 days.

The severe withdrawal symptoms in narcotic addicts (morphine, heroin, etc.) are effectively mitigated by this therapy.<sup>5</sup> Hirsch<sup>6</sup> found a low percentage of blood sugar during the withdrawal period. Anton and Jacobi<sup>7</sup> used intravenous glucose and insulin to facilitate more complete utilization of sugar.

In acute and chronic barbiturate intoxication, Lambert<sup>8</sup> mentions the use of insulin along with glucose in comatose patients.

Cases with manifestation of cerebral arteriosclerosis are favorably affected, according to Beale.<sup>9</sup>

### MALNUTRITIONAL STATES

Pitfield<sup>10</sup> is credited as having first reported the use of insulin in malnutrition. The gratifying improvement in appetite and gain in weight due to the improved carbohydrate metabolism and lowered blood sugar is well known. Knighton<sup>11</sup> reports of its use in overcoming anorexia and malnutrition in conditions such as tuberculosis, asthenia, and infectious diseases. Its use in coeliac disease and in cachexia of malignancy is evident. Pitfield<sup>12</sup> reports extremely favorable results in athreptic infants, myasthenia gravis, and tuberculosis. In undernourished children it is of great value in speeding up the rate of gain where there is not satisfactory response to the usual hygienic and dietary regime. Higgons<sup>13</sup> recalls that it is of particular value in these children in checking the weight loss due to chronic low grade infections with fever. Bowen and Lockie<sup>14</sup> report marked improvement in eight cases of chronic atrophic arthritis in women between the ages of 18 and 66 years who were severely undernourished. Pneumonia, typhoid fever and other debilitating illnesses are readily benefited by improvements of the nutritional state.

### CARDIO-VASCULAR DISEASES

When glucose is given in conjunction with insulin in cardiac conditions the nutrition of the myocardium is improved. The glycogen storage is increased when glucose and insulin is given in all the muscles and in the liver, but proportionately more in the heart muscle than in the skeletal muscles. Nichol<sup>15</sup> reports 20 cases of cardiac involvement including coronary occlusions, some with congestive failure and arterial hypertension, mitral stenoses due to rheumatic heart disease, and cardio-neuroses. The electrocardiograph revealed no untoward effect following insulin-glucose therapy, which, of course, was used as an adjunct to other

therapy. Nichol reports other authors in his article as stating that very gratifying results were obtained in congestive heart failure, angina pectoris, coronary sclerosis with definite improvement of rhythm, dyspnoea, pain diuresis, and lowering of arterial hypertension, and increased venous pressure. Kohne<sup>10</sup> reports immediate improvement in a case of coronary thrombosis in which 50 cc. of 50% glucose and insulin U v was given daily for 9 days. Definite improvement of the "coronary T" wave in lead II was shown in the electrocardiographic tracing. Knighton<sup>11</sup> also reports favorably of this therapy in myocardial insufficiency and coronary thrombosis, but warns against the indiscriminate use of insulin and consequent reduction of glycogen in the heart muscle to such a degree below the optimum as to precipitate a typical anginal attack. He states also that arterial hypertension associated with endocrine dysfunction as well as obliterative lesions of the vascular system (Berger's disease) frequently respond to this treatment. Beale<sup>6</sup> states that the group of diseases in which obliteration of the blood vessels is a factor is worthy of trial. Response was noticed in such conditions as arteriosclerotic gangrene, angina pectoris, cerebral arteriosclerosis, and thrombo-angiitis obliterans. He also incidentally mentions bed sores and chronic leg ulcers. The rationale which he sets forth is that increased carbohydrate metabolism will favor dissolution of fat deposits in the inner walls of the peripheral vessels.

#### GASTRO-INTESTINAL DISEASES

Acute dilation of the stomach was successfully treated with insulin and glucose together with gastric lavage by Mallory.<sup>17</sup> Gastric ulcer and gastritis cases were rendered symptomless after 3 to 4 weeks of treatment, according to a report by Roller.<sup>18</sup> The latter states that if after 4 weeks the roentgen findings are not favorable it is advisable to continue insulin for a longer period. Patients remain symptomless even after insulin is discontinued. The dosage varied in each individual case, but Roller's average dosage was Ux in the morning and Uxv to xx at noon and in the evening. The patients received an increase of carbohydrate in their dietary regime as it was desirable to have them "overfeed" themselves. Wolf<sup>40</sup> writes that insulin has an alkalinizing effect upon gastric acidity, brings about a normalizing of the motility and secretion of the stomach, and encourages cicatrization.

Non-mechanical intestinal obstruction<sup>23</sup> was greatly improved when Ochsner, Gage and Cutting found greater stimulation of the intestinal musculature when insulin and glucose was given.

Its use is also referred to in hemorrhagic colitis.

At this point one may well include certain liver conditions in which this form of therapy was utilized. Particularly gratifying results in liver degeneration due to arsenic poisoning was reported by Mosonyi,<sup>10</sup> cirrhosis of the liver by McCabe and Hart,<sup>20</sup> acute and subacute yellow atrophy by Buresch,<sup>21</sup> and hepatitis associated with cholelithiasis

by Gunn.<sup>22</sup> Mosonyi's<sup>10</sup> account of three cases of dehydration due to arsenical poisoning reveals that when insulin and dextrose are used the diarrhea and therefore dehydration is definitely controlled within 8 days. If this therapy is discontinued too early the diarrhea returns. He states that the arsenic has definitely influenced the carbohydrate metabolism and insulin given with glucose has a favorable effect on the liver damage and favors mobilization of liver glycogen and thereby inhibits the catabolism of sugar and improves liver function.

Insulin given in jaundiced patients will shorten the period of jaundice and reduce the itching.<sup>80</sup>

#### ENDOCRINOPATHIES

In hyperthyroidism, insulin is of benefit because of its antagonistic action with thyroxin on blood sugar and general metabolism. Insulin aids to stabilize weight and basal metabolism and is of great value in those cases of hyperthyroidism with rapid uncontrollable loss of weight.<sup>24</sup> Parathyroid deficiencies show synergistic response when insulin is used in association with calcium, parathormone, and vitamin D.<sup>25</sup>

Infantile sexual development is given a striking acceleration by the use of insulin, according to Williams,<sup>26</sup> who reports a case of an 8½-year-old girl who responded almost immediately in her body growth and sexual development. Stimulation of the mammary glands, ovaries and uterus was quite noticeable. Discontinuance of insulin was followed by prompt regression of secondary sexual phenomena. Felderbaum<sup>27</sup> suggests that infantilism due to failure of the alpha cells without coexisting beta cell atrophy (diabetes) may occur.

Insulin has been found to be an effective aid in the treatment of endocrine sterility. Genital function is improved if 10 units are given in the morning and night.<sup>40</sup>

Ovarian disorders causing metorrhagia, menorrhagia and dysmenorrhea have also been mentioned as well as mild cases of Simmond's disease.

#### OTOLARYNGOLOGIC CONDITIONS

Progressive deafness due to sclerosis of the vessels of the middle ear frequently shows improvement under this regime was stated by Beale,<sup>25</sup> who also reports enhancement of anti-luetic therapy with insulin in syphilitic lesions of the nose, throat and ear. He also advocates its use in edema of the pharynx, uvula, glottis and larynx. Jarvis<sup>28</sup> also mentions the use of insulin in luetic ulcerations of the throat and in pharyngeal and laryngeal edema. Jarvis states that the common "colds" can be prevented by the use of insulin (3 units) given every 10 to 15 days, and symptoms can be relieved by 3 units given every day for 3 days. He advocates small doses of insulin (3 units) in varying time intervals from daily to twice weekly in such conditions as mucopurulent secretions within the nose, nasal polyps (effects dehydration) acute otitis media, chronic suppurative otitis media, and furuncle of the external auditory canal. Ersuer



and Pressman<sup>20</sup> also report a series of cases of post-operative mastoiditis with delayed healing and a persistent discharging fistulous tract which responded with a rapid decrease in drainage, now granulation formation, and healing under insulin therapy.

Other conditions suggested for insulin trial are aphthous stomatitis, anosmia, paradentitis, and periodontosis.

#### ALLERGY

Bronchial asthma treated by Bartelheimer<sup>30</sup> with hypoglycemic shock favorably effects the asthmatic paroxysm. The effect may not be immediately noticeable, but improvement is usually present over a long period of time. There is a definite increase of the vital capacity of the lung during the insulin shock period.

Caven<sup>31</sup> reports two cases of urticaria which failed to respond to the usual methods. One case which was associated with sensitivity to wheat and eggs showed localized reaction of swelling, redness and intense itching when zinc-protamine insulin was used. However, when regular beef insulin was substituted, improvement was evident without untoward reaction.

#### MALIGNANCY

We are naturally skeptical of reports of improvement or cure of cancer with this method of treatment. However, such instances are reported in the literature and we are including them here for the sake of completeness. Beale<sup>25</sup> is quite enthusiastic with the results he obtained in cases of a basal cell carcinoma of the cheek, which was reduced in size, improvement of hyperkeratosis of the cheek and entire disappearance of a suspicious squamous cell carcinoma of the lower lip. Insulin was used in conjunction with calcium, viosterol, parathormone. Regression and disappearance of Jensen's sarcoma has also been mentioned.

There is no doubt that insulin plus a high carbohydrate diet in patients with malignancy is desirable in order to maintain nutrition.

Beale<sup>25</sup> suggests the use of insulin for the purpose of relieving pain of cancer, since it has been shown that there is an increase in the blood calcium  $1\frac{1}{2}$  to 2 hours after injection and an increase of blood calcium minimized this type of pain, according to Behan.<sup>22</sup>

#### DERMATOLOGIC LESIONS

Hyperkeratosis, basal cell carcinoma, squamous cell carcinoma, luetic lesions, urticaria, decubitus ulcers and chronic leg ulcers were briefly mentioned in this paper. Payne's<sup>32</sup> report on this treatment of varicose ulcer is interesting. Psoriasis and scleroderma<sup>5</sup> have also shown improvement. Scattered throughout the literature are reports on cases of crural ulcers treated with an insulin ointment, furunculosis, Quinke's edema, pellagra, chronic eczema, particularly that associated with varicose ulcer.

#### INFECTIONS

Conditions such as the common "cold" otitis

media, pyodermas already have been dwelt upon. Gunn<sup>32</sup> reports improvement in pneumonia and osteomyelitis. Weight loss in children with chronic low grade infections were checked.<sup>13</sup>

Under this caption we wish to mention references to the use of insulin arthritis. Howitt and Christie<sup>34</sup> report 20 cases with improvement of the nutritional state and alleviation of stiffness and pain in the joints. No radiological changes were noted, however. Bowen and Lockie<sup>34</sup> also report definite improvement in eight cases of chronic atrophic arthritis associated with an improvement of nutrition.

The extreme toxicity associated with diphtheria is greatly benefitted by insulin and glucose administration. Schwenkter and Noel<sup>35</sup> report recovery of 13 of 14 critical cases.

#### SURGERY

Pre-operative non-diabetic acidoses showed a more rapid disappearance of ketoses when treated with insulin and glucose than when treated with glucose alone. This type of therapy is particularly indicated in cases of pre-operative acidosis due to starvation and vomiting as in acute intra-abdominal surgical conditions. A poor surgical risk is changed rapidly to a fair or good one. Post-surgical shock was greatly improved with rapid cessation of typical clinical symptoms of surgical shock. Post-anesthetic toxemia as evidenced by acetonuria, acetoneuria, acidoses, vomiting, flushed face, dry lips, weak rapid pulse, restlessness and unconsciousness shows rapid response. Eight such cases were reported by Fisher and Mensing.<sup>36</sup>

Klaften<sup>37</sup> used an insulin preparation by local application by brushing and tampon on cervical erosions with encouraging results.

Fractures produced experimentally in rabbits by Stuck<sup>38</sup> showed a tendency to more advanced healing at 2 to 4 weeks by microscopic study in the animals receiving insulin.

#### MISCELLANEOUS GROUP

Myasthenia gravis has shown satisfying clinical results with insulin therapy. Robinson<sup>39</sup> was very enthusiastic in his report. Pitfield<sup>12</sup> states that the etiology lay in the metabolism of the glucosides of the muscle fibers as shown by a biopsy of the deltoid muscle. The case which he reported was greatly benefited.

Among a host of other entities mentioned in the medical literature we also find toxemias of pregnancy—especially hyperemesis gravidarum, multiple sclerosis, chronic nephritis associated with azotemia, etc.

#### CONCLUSION

A review of the literature is presented revealing the widespread therapeutic use of insulin in practically every medical field.

The authors of this article are not in entire accord with all the reports presented, as some are evidently over-enthusiastic. However, for the sake of completeness all aspects were included.

(Continued on page 172)

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## D. F. HARBRIDGE, M. D.

At the recently concluded session of the Arizona State Medical Association, held in Tucson, April 18-20, 1940, Dr. D. F. Harbridge, of Phoenix, succeeded to the presidency of the Association, replacing Dr. Charles Smith, of Nogales.

Dr. Harbridge was graduated from the University of Pennsylvania with the degree of Doctor of Medicine. He interned at Saint Mary's Hospital in Philadelphia. Early in his career he became associated with the teaching staffs of several eye hospitals and departments of ophthalmology in Philadelphia. At one time he was a member of the clinical staff of Wills Eye Hospital, a member of the staff of Saint Mary's Hospital and Saint Agnes' Hospital, Philadelphia. He organized and became chief of the eye department of the Chester Hospital, Chester, Pa. For a time he was a lecturer in ophthalmology at the Philadelphia Polyclinic, which is now part of the University of Pennsylvania.

Before and since coming to Arizona to establish a private practice of ophthalmology, Dr. Harbridge has been markedly active in the work of organized medicine. He has been president of the Delaware County (Pennsylvania) Medical Society, secretary of the Chester (Pennsylvania) Medical Society, president of the Maricopa County (Arizona) Medical Society, delegate to the American Medical Association, secretary and treasurer of the Board of Managers of SOUTHWESTERN MEDICINE, and secretary of the Arizona State Medical Association.

The latter office was held by him for nearly a quarter of a century.

The new president has been an active author in his field. He has published 35 contributions in current medical literature. He is the author of the chapter on Tumors of the Eye in the *American Encyclopedia of Ophthalmology*. At one time he was editor of three chapters in the *Ophthalmic Year Book* under the headings of Conjunctiva, Tumors and Toxic Amblyopia. He has been for many years abstractor of the *British Journal of Ophthalmology* for the *American Journal of Ophthalmology*.

Dr. Harbridge is licensed in Arizona, New Jersey, Pennsylvania, Delaware, Wisconsin and California.



Professional memberships include the following: American Medical Association, Arizona Medical Association, Southwestern Medical Association, American Ophthalmological Society, Western Ophthalmological Society, Association for Research in Ophthalmology, American College of Surgeons, honorary member Philadelphia County Society, conferred in 1935. He has been certified by the American Board of Examiners in Ophthalmology.

Dr. Harbridge assumes the presidency of the Arizona State Medical Association on the eve of the fiftieth anniversary of the society.

## SICK MAN'S CHOICE

Physicians have contended that it is a fundamental right of the sick man to choose freely his personal physician. Most of the hot-eyed missionaries of the Blessed Day have minimized the desirability of this characteristic of American med-



icine. With labored and strained logic it is pointed out that the phrase "free choice of physician" is but a shibboleth, of out-moded value and use to modern society.

Sickness is a highly personal event. No one else can share the sick man's pain, his anxiety as he walks alone in the dark paths. If, in his loneliness, he feels that only one physician above all others can understand, can make him well again, then in the name of all common sense he should have the services of that man. No substitute, cheap or free, can possibly or rightfully take part in such a situation.

America's physicians have built an unsurpassed system of medicine based in part on the idea of free choice of physician for everyone. Which statement ought to help explain their grim insistence on the observance of that principle in any scheme of medical service to be set up now or ever. Organized medicine has clung to this concept, advocated it, defended it with all its might.

Recently the monthly *Forum* published an anonymous article reciting a harrowing tale of a wife and mother, "I Can't Afford to Be Sick." After a fiction-like series of mishaps, the author says: "My experience casts a white light on the problem of state or group medical care. I see clearly that the most important thing is to preserve, somehow, the principle of competition for the patient's favor. The doctor who can deliver the goods professionally and personally must get the business as he does now. His confreres who are starving must continue to starve, in the best interest of society."

And that says in different words just what American medicine means when it declares that the patient shall have the physician of his choice. At last some of the sick folks are becoming articulate about this controversy. And their desires will shoot down the gaudy trial balloons up in the high clouds.

### FREEDOM OR LICENSE?

The dark forces of ignorance and prejudice, despite the efforts of the more literate, still plague the civilized world, at odd times and in the most unexpected places. Here is a recent case study:<sup>1</sup>

"Half the first grade of Crockett School is down with the mumps, says the Herald-Post, which sometimes gets its facts straight. Dear, dear, this is awful. The mumps epidemic hit the first grade, knocking out 24 out of 41 pupils.

Let's immunize the whole city against mumps!

If we are to immunize everybody under 18 against diphtheria—at a fee to the family doctor of \$1.50 to \$2 per person, why stop there? Especially when there's mumps around.

To be sure, Dr. L. T. Cox, City-County Health Officer, says there are only 26 reported cases of mumps in the city. But that's all at one time, whereas we have had only about 60 cases of diphtheria through the whole year. If we have 26 mumps cases today, we may have another 26 two weeks hence, and then another 26, and so on ad infinitum.

Let us immunize against mumps by all means!

"There is no more mumps than usual at this time of year", says Dr. Cox. "Mumps is like measles, it comes more in the spring."

Now there's something else—measles. We have scores of cases of measles every year here in El Paso. And scarlet fever—that's another. And influenza causes more illness than all the rest put together. Let's immunize individually and separately against all of them. If there aren't immunizing agents for some of them, let's invent 'em.

At \$1.50 to \$2 a shot it's a good racket.

It has been said that advertising in daily newspapers is written down to the level of the 12-year-old mind. The intellect that knew no better than to give the above birth in the terrible permanency of cold print could not have been aiming higher in his reckless accusations than to reach his fellows in the 12-year mental group.

We don't know of a health department or an individual physician in Arizona, New Mexico or El Paso that would not give his services gratis to any deserving case brought in. If this be a "racket", then there is something basically wrong about all concepts of human ideals and ethics. To all but the reckless, ignorant few it would seem that the world today needs more such "rackets", a few more idealists than bigots.

Is this clinical case one of freedom of the press, or just mere license?

(1) EL PASO TIMES, May 8, 1940.

### THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

## Special Section

# Arizona State Medical Association

PRESTON T. BROWN, M.D., *Associate Editor*  
403 Professional Bldg., Phoenix, Arizona

### OFFICERS FOR 1940-1941

The following are the officers for the Association for 1940-1941, as elected at the recent Annual Meeting:

President (elected in 1939).....	D. F. Harbridge, M.D.
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	Tucson
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	Tucson
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	Phoenix
Delegate to the American Medical Association	
.....	Harold W. Kohl, M.D., Tucson

The outgoing President, Dr. Chas. S. Smith, automatically becomes a Councilor-at-Large for a term of three year. Holdover members of the Council not subject to election this year are: Dr. Geo. C. Truman, Councilor Central District; Drs. C. R. Swackhamer and Hal W. Rice, Councilors-at-Large, and Dr. John E. Bacon, Chairman of Committee on Medical Defense.

### COLDS—CAUSED BY OVEREATING

H. T. BAILEY, M.D.

Much has been written and said about colds and the complications caused by them, but with your permission I will bring up this old subject by a different approach.

Go with me on a long train journey, say from Phoenix to New York, or from Boston to San Francisco or any place where we are on the train for two or three days. The first day out we eat as heartily as we do when at home at work; the next day we are not hungry but we eat anyway—perhaps from habit.

In July and August, 1939, I was in Mexico City. At this time of the year it is very damp there because of rain almost every day. The high altitude is purported to slow digestion from three to four hours to six to eight hours. Anyway the physicians there claim about 80% of tourists have either a severe cold or a gastro intestinal disturbance soon

after they arrive. The people who ate two light meals a day had little or no trouble. Some of our party ate only two light meals a day and some days only one. Even those who had an arrested chronic sinusitis continued to stay in pink of condition on a light diet while those that ate heavily and especially of tropical fruits, such a mangos and papaya, had indigestion with its many complications and a severe coryza. I saw many cases of acute sinusitis and much tuberculosis. The lack of exercise causes a sluggish condition of the alimentary tract, which is followed by a full or stuffed feeling, at times a burning sensation in the stomach or in the intestines, then an apathetic feeling, mild headache or dizziness, yet we continue to eat.

What happens in our body? By taking more food in than we can digest, we at first stimulate the mucous membrane of the stomach beyond its power to digest. The cells of the mucous membrane and glands are engorged, then exhausted and congested. The bowels do not act to eliminate the waste products. The food in the stomach and intestines lies there and soon it begins to ferment, the proteins split, developing butyl alcohol which is a poison. This poison is absorbed. The liver is congested because this waste material can not be manufactured into useful products for the system. Now there is more waste material in the body than can be thrown off by the skin, the kidneys and the lungs and bronchial mucous membrane. No other loose mucous membrane except in the nose, tonsils or tonsillar region if the tonsils are out, the pharynx, larynx, etc. This mucous membrane begins to eliminate the waste, and if the patient sits in a draft or gets wet in a rain and fails to change clothing quickly, then there is more engorgement in the nose and throat followed by first a watery discharge of the nose, then hot, burning sensation in the nose, a pricking in tonsillar region as if a straw or some foreign body had lodged there, then cough with no discharge, and we have a cold.

Why does the nose and throat become engorged? In perfect health when the surface blood vessels and capillaries are contracted and the blood driven out by cold drafts, the vessels in the abdominal viscera will take care of the excess and the mucous membrane of nose and throat is not materially engorged; but in a person who has an engorgement or a mild inflammation of alimentary tract and liver from overeating, we have a different condition. Here we have an excess of blood trying to absorb the waste products and poison material manufactured in the alimentary canal. When such a person is exposed to a cold draft on the body, arms,



## President's Page

AS PRESIDENT of the Arizona Medical Association for the current year, the first message I would bring the membership through the medium of this President's Page is that you diligently read SOUTHWESTERN MEDICINE. This is the official medical journal for the medical societies of *Arizona, El Paso County, Texas, New Mexico*, and of the *Southwestern Medical Association*. I would like to see this *President's Page* alternated between the presidents of these organizations in order to secure a diversity of opinions and recommendations in that manner.

In reading the *President's Page* of another state medical journal, the page being the first offering of that incoming president, I was amused at his statement that he had been informed that readers of the *President's Page* were said to be only the other past presidents who had labored over their contributions. Perhaps that statement is true, and perhaps it is also true, as some members say, that the *Journal* as a whole is not widely read. I am inclined, however, to think that the contrary is true, and that the *Journal* is widely read, but that the reader does not take the time and trouble to give the editorial staff the benefit of his reactions to the various articles appearing within the pages.

So I say, read SOUTHWESTERN MEDICINE; send the editor your opinions as well as your contributions; let him know what organizational or scientific subjects you note in the *Journal* and such others as you would like to see included. The practice of medicine in the Southwest will be better for your participation and response.

Fraternally yours,

A handwritten signature in dark ink, reading "D. F. Harbridge". The signature is fluid and cursive, with a long, sweeping underline that extends to the left and then curves back under the name.

President, Arizona Medical Association.

legs or feet the capillaries contract more readily and more completely than in a normal person; and as the viscera are already surcharged the next place to take up the blood driven from the surface is the mucous membrane of the nose, pharynx, larynx and bronchial tubes. Now as nature is trying to eliminate these poisons manufactured in the alimentary tract through the mucous membrane of the nose, throat and bronchial tubes, which is stimulated to create an excess of watery and mucous discharge, any bacteria that has been lying dormant or any that may be blown or inhaled into nose or throat at once begin to grow and we have a coryza or cold in the head. The old story of seed, soil and season. Seed will not grow without soil and season. Most of us have plenty of germs in our nose and throat to make us ill, but if the tissues are resistant enough they do not grow. But now the soil is prepared and they do grow.

### DISCUSSION

DR. W. JEWELL SMITH. I feel that Dr. Bailey has brought us a thought that is very worthy of consideration. It is not a question whether our colds are due to the influenza bacillus, the pneumococcus or a filterable virus. He places the emphasis on the soil rather than the seed, and it is a point that if it were heeded would probably result in a more rational method in the handling of the so-called common cold.

A recent article by Dr. D. C. Jarvis of Barre, Vermont, brings out the point that there are twelve varieties of the common cold. He speaks of the open window cold, dusty trade cold, perspiration cold, sugar cold, chemical vapor cold, fruit and vegetable cold, citric acid cold, the post festival cold, vasomotor rhinitis starch cold, influenza type of cold and lastly the drug cold.

You will note this listing with the possible exception of the influenza type, all of these causes have to do with an altered physiological reaction due to either some outside irritant as in the case of dusty trade or chemical, or to an intrinsic cause from ingestion of foods or substances that changes the normal metabolism.

If we direct our treatment towards the elimination of these underlying causes and try to analyze each case, better results will be obtained.

### EXTRA-DIABETIC USES OF INSULIN

(Continued from page 167)

We can conclude, however, that insulin is a valuable therapeutic agent in conditions other than diabetes mellitus, and that we can anticipate with a great deal of interest future research and clinical reports along these lines.

Pacific-Southwest Bldg.

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## COMMUNICATIONS

Sir:

We would appreciate it if you would give notice of the postgraduate course in obstetrics for physicians, principally general practitioners, which is offered by the University of Chicago and the Chicago Lying-in Hospital in co-operation with the Illinois State Department of Health and the Children's Bureau, U. S. Department of Labor.

This course runs from 5 to 6 weeks. The only cost to the physicians would be that of their board and room, their own personal incidental expenses and a nominal fee of \$15. The number accepted for each course will be limited in order that a personal relationship may be maintained between the staff and the physicians. All of the members of the Department of Obstetrics and Gynecology will participate in the program.

Applications and inquiries should be addressed to Postgraduate Course, Department of Obstetrics and Gynecology, 5848 Drexel Ave., Chicago, Ill.

Very truly yours,

H. CLOSE HESSELTINE, M.D.

Sir:

The twenty-fifth annual meeting of the American Association of Industrial Physicians and Surgeons, together with the first annual meeting of the American Industrial Hygiene Association, will be held at Hotel Pennsylvania, New York City, June 4, 5, 6 and 7, 1940. This will be a four-day convention intensively devoted to the problems of industrial health in all of its various medical, technical and hygienic phases, with particular stress on prevention and control of occupational hazards. Important programs have been prepared, and technical and scientific exhibits will be a feature of the convention. The dinner on Thursday evening, June 6, will be the occasion of the presentation of the Wm. S. Knudsen award for the year of 1939-40. The medical profession is not only invited but is urged to attend these gatherings, as they will be of unusual interest and value to all practitioners interested in industrial injuries and illnesses. We will greatly appreciate whatever mention you can make in the issues of your magazine between now and June regarding the above.

Very sincerely yours,

INDUSTRIAL MEDICINE,

A. D. Cloud, Managing Editor.

Sir:

May we ask you to call the attention of your readers to the fact that the Western Branch, American Public Health Association, will hold its eleventh annual meeting in Denver, Colo., June 23-27, 1940. The program will be devoted to discussion of public health matters of special interest to the West, and

will present speakers of national and western prominence.

Inquiries should be addressed to Dr. A. L. Beaghtler, Director of Health Service, Denver Public Schools, or to the undersigned.

Sincerely yours,

W. F. HIGBY, Secretary.  
45 Second St., San Francisco, Calif.

## NEWS

### General

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted at Atlantic City, N. J., from Friday, June 7, through Monday, June 10, 1940, prior to the opening of the annual meeting of the American Medical Association in New York City on Wednesday, June 12, 1940. Formal notice of the exact time and place of the examination will be forwarded to each candidate several weeks in advance of the examination dates. Group A candidates will be examined on June 7 and 8, and Group B candidates on June 9 and 10.

The annual dinner of the board will be held in New York City on Wednesday evening, June 12, at the Hotel McAlpin. Diplomates certified at the preceding days' examination will be introduced personally, and there will be several speakers. All diplomates of the board, and others interested in the work of the board, are cordially invited to attend this dinner.

Tickets at \$3.50 each may be obtained from Dr. Joseph L. Baer, chairman, 104 S. Michigan Ave., Chicago, Ill., or at the registration desk during the examinations.

For further information and application blanks, address Dr. Paul Titus, secretary, 1015 Highland Bldg., Pittsburgh (6), Pa.

The American Medical Golfing Association will hold its twenty-sixth annual tournament at Winged Foot Golf Club, Mamaroneck (Westchester County), New York, on Monday, June 10, 1940. Members may tee off from 7:30 a. m. to 2:00 p. m.

Thirty-six holes of golf will be played in competition for the 50 trophies and prizes in the 8 events. Trophies will be awarded for the association championship, 36 holes gross, the Will Walter trophy; the association handicap championship, 36 holes net, the Detroit trophy; championship flight, first gross, 36 holes, the St. Louis trophy; championship flight, first net, 36 holes, the President's trophy; 18-hole championship, the Golden State trophy; 18-hole handicap championship, the Ben Thomas trophy, and the Atlantic City trophy; maturity event, limited to Fellows over 60 years of age, the Minneapolis trophy; and the oldguard championship, limited to competition of past-presidents,

the Wendell Phillips trophy. Forty other prizes will be awarded for the various flights.

All male Fellows of the American Medical Association are eligible and cordially invited to become members of the A. M. G. A. Write to Bill Burns, executive secretary, 2020 Olds Tower, Lansing, Mich., for application blank. Participants in the A. M. G. A. tournament are required to present their home club handicap, signed by the club secretary, at the first tee on the day of play. No handicap over 30 is allowed. Only active Fellows of the A. M. G. A. may compete for prizes. No trophy is awarded to a Fellow who is absent from the annual dinner, which is always worth while waiting for.

### El Paso

The regular dinner and staff meeting of the Southwestern General Hospital was held Thursday, March 28, 1940, at 6:30 p. m., in the hospital auditorium. The program was as follows: "Empyema of the Gall Bladder," Dr. James Vance; discussion by Dr. C. D. Awe. "Tropical Sprue," Dr. R. B. Homan, Jr.; discussion by Dr. J. J. Gorman.

A regular staff meeting of the Hotel Dieu Sisters' Hospital was held Tuesday, April 2, 1940, at 12:10 p. m., in the auditorium of the Nurses's Home. Luncheon was served. The program was as follows: "Pneumococcic Peritonitis with Recovery," Dr. L. Villareal; discussion by Dr. Paul Gallagher. "Case of Horseshoe Kidney," Dr. W. Curtis; discussion by Dr. H. E. Rogers.

A regular meeting of the El Paso County Medical Society was held April 8, 1940, at 8:00 p. m., in the tea room of Hotel Cortez. The program was as follows: "Jaundice—Points in Diagnosis and Treatment," Dr. J. J. Gorman. "Cancer," Dr. J. W. Cathcart.

A regular meeting of the El Paso County Medical Society was held March 25, 1940, at 8:00 p. m., in the tea room of Hotel Cortez. The program was as follows: "The Role of Gastroscopy in Private Practice" (Review of 100 Cases), Dr. C. N. Giere. "Liver Function" (Illustrated by Several Cases), Dr. J. Mott Rawlings.

A regular meeting of the El Paso County Medical Society was held April 22, 1940, at 8:00 p. m., in the tea room of Hotel Cortez. The program was as follows: "Tetanus," Dr. C. E. Jumper. "Blood Coagulation," Dr. W. W. Waite.

A regular dinner and staff meeting of the Southwestern General Hospital was held Thursday, April 25, 1940, at 6:30 p. m., in the hospital auditorium. The program was as follows: "Case Report of Schizophrenia Treated with Metrazol; Description of the Paroxysm and Resume of the Pharmacology of Metrazol," Dr. S. D. Swope. "Case Report of Encephalitis in a Child with Differential Diagnosis," Dr. Erich Spier.

## MISCELLANY

### 1930-1940: THE VITAMIN DECADE

What medical historians will label the 30's no one can tell, but there is a good possibility that this period will go down in history as the "vitamin decade." Certainly no previous 10 years in the history of mankind has seen such advances in the knowledge of vitamins. Three columns with approximately 100 references covered the field of vitamins in Vol. 25 of the *Quarterly Cumulative Index* (Jan.-June, 1929). The corresponding period for 1939 required 26 columns of over 900 titles.

The establishment of the formula and the synthesis of vitamin A are recent triumphs of chemistry. The 11 vitamins now available in synthetic form were displayed at the national meeting of the American Chemical Society. These are vitamins A, B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, C, D<sub>2</sub>, E, K, riboflavin, nicotinic acid and ergosterol.

In the last decade vitamin B has become the vitamin B complex, and the elements of that complex are being defined. The Committee on Vitamin Nomenclature has advised abolishing the term vitamin B, unqualified; recommending vitamin B<sub>1</sub> for B<sub>2</sub> or G, and pellagra preventative factor or P-P factor. Nicotinic acid seems to fill the bill for the anti-pellagra factor.

Albert Szent-Gyorgi's name will always be associated with the isolation of vitamin C. For this work he was awarded the Nobel Prize in Medicine and Physiology in 1937, the first such award for vitamin research. The advances in chemical knowledge led to great strides in determining new sources of vitamin C. The therapeutic use of vitamin C in hemorrhagic and purpuric states is based upon its specific action in the hemorrhages of scurvy. However, hemorrhagic diseases of non-scorbutic origin have not responded to the use of ascorbic acid.

Several forms of vitamin D have been distinguished in recent years. The two forms of interest in medicine are activated ergosterol and activated dehydro-cholesterol. The cholesterol form is found in animal skin. Vitamin E is a fat soluble factor whose presence in the diet is necessary for fertility in rats. It seems to have a definite effect in increasing fertility among cows. There is no proof at present that vitamin E affects fecundity in human beings.

Vitamin K is also a fat soluble principle, of importance in formation of blood clot. Vitamin K seems to be essential for the production of prothrombin. There is evidence to show that hemorrhagic states common in obstructive jaundice can be controlled by the proper administration of vitamin K.

There is no doubt that large underprivileged groups within the population suffer from vitamin deficiencies. The proper treatment of these people



is provision for adequate diets rather than wholesale exhibition of vitamin mixtures. The council on pharmacy and chemistry of the American Medical Association does not recognize preparations including a variety of vitamins excepting combinations of A and D. An excellent summary of recent knowledge on vitamins is contained in the symposium on the subject published in book form by the American Medical Association in 1939.

Vitamin research bloomed full flower in the 30's. But the wealth of knowledge gained of new sources, the exaggerated claims, the fads will wither away. New uses, and even of new elements in the vitamin series, should serve mankind for all time to come.—*Journal-Lancet*.

#### OPTOMETRY AND THE EYES OF SCHOOL CHILDREN

School physicians and nurses discover many cases of defective vision, and advise the parents to take the children to a physician for diagnosis and treatment. This advice is important, because many cases of defective vision are caused by pathological changes in the eye itself, or some disturbance elsewhere in the body—conditions which an optometrist is incapable of diagnosing or treating. The physician is the proper one to decide whether an individual case needs the services of a specialist and what kind of a specialist.

Furthermore, in many cases of refractive error, especially in young children, no one can make accurate examination without the aid of a cyclopegis ("drops"), a procedure which optometrists cannot legally employ.

Since an accurate diagnosis is a necessary preliminary to any treatment, the school nurse is legally required to advise the parents of a child to have a diagnosis made by a licensed physician, for only he is empowered to make a pathological diagnosis and to prescribe drugs and operations for relief.—*Jour. Med. Soc. N. J.*

#### PSYCHONEUROSIS AND BACKACHE

The psychoneurotic group of patients is one of profound interest. To dismiss these patients as neurotic or to classify them among those of constitutionally inadequate personality is neither fair to the patient nor is it in the spirit of Hippocrates. Undoubtedly some patients are malingerers who recover with the settlement of their compensation claims or the fulfillment of their subconscious desires, of which their backache is but the outward manifestation, but the majority are honest.

Most of us willingly admit that the presence of a congenital defect in the osseous skeleton predisposes that individual to backache from subsequent trauma, but are we as lenient with those whose complaints are of those conditions which, for want of a better name, we term functional? Might there not be congenitally weak links in the gossamer elements of which the central nervous system is built up? If we admit that a developmental defect in

bone may predispose to the occurrence of pain following even slight trauma, should we not be equally ready to extend similar credence to those whose pains are mostly "in their heads"?

The nervous, anxious woman with a painful coccyx may obtain, in our experience, only a temporary respite from pain by surgical methods. The majority, if they receive daily Sitz baths, encouragement, diathermy and massage of the coccygeus muscles, will obtain relief from symptoms.—*Arch. Phys. Therapy*.

#### DRUG DISPENSING

Physicians who dispense their own drugs must comply with the provisions of the Federal Food, Drug and Cosmetic Act, particularly Section 502-b. This section provides that a drug or device shall be deemed misbranded "If in package form unless it bears a label (1) showing name, place of business of manufacturer, packer or distributor; (2) an accurate statement of the quantity of the contents in terms of weight, measure, or numerical count, reasonable variation permitted."

As the law is written, it applies to physicians who dispense their own drugs, as well as to pharmacists, drug stores, or anyone who manufactures or distributes drugs. The physician (and the drug store or pharmacist) is exempt from these labeling provisions, *only IF* he writes a prescription and sends the patient to the druggist for the medicine.

Other parts of Section 502 are also of interest to physicians, such as Part D re labeling of narcotic drugs as "habit forming" unless on written prescription which is marked unrefillable; Part E requiring the common or usual name of the drug, if one, to be written on the label; or the names of the active ingredients giving the proportion or quantity of bromides, ether, chloroform, acetanilid, acetphenetidin, amidopyrine, antipyrine, atrophine, hyoscine, hyoscyamine, arsenic, digitalis, digitalis glucosides, mercury, ouabain, strophanthin, strychnine, thyroid, or any derivatives of such substances, **UNLESS** given in a written prescription: Part F requiring adequate directions for use.

The aim of the law, of course, is to eliminate "counter prescribing" by drug stores and harmful self-medication with highly potent and often dangerous drugs. It is not known just how strenuously the Federal Food, Drug and Cosmetic Administration will require physicians who dispense to adhere to this particular portion of the law, but it is a federal statute and should be complied with.—*Jo. Ms. M. S.*

#### SULFATHIAZOLE AND SULFAMETHYLTHIAZOLE

Recently there have been reports that two derivatives of sulfapyridine, sulfathiazole (2(para-amino-benzene-sulfonamido) thiazole) and sulfamethylthiazole (2(para-amino-benzene-sulfonamido) 4-methylthiazole), give some promise of therapeutic effect. The Council on Pharmacy and Chem-

istry of the American Medical Association has not given consideration to the acceptability of the names sulfathiazole and sulfamethylthiazole. However, since the medical profession has such interest in sulfanilamide and its derivatives, the council asked Dr. Perrin H. Long to prepare a preliminary report on these two substances. Dr. Long reports that it is too early to pronounce on the comparative clinical therapeutic effects of sulfathiazole and sulfapyridine, but that experience to date indicates that sulfathiazole is about as effective as sulfapyridine in pneumococcic pneumonia in human beings and at least as effective as sulfapyridine, if not more so, in staphylococcic infections in man. Dr. Long concludes: "The evaluation of these new chemotherapeutic compounds will necessitate extensive experimental and clinical investigations in order to determine their efficiency in the control of infections and their clinical toxic manifestations. Until the time when such data are in hand, it is to be hoped that enthusiasms do not outrun common sense." The council concurs with the conclusions of Dr. Long. The two preparations have not been licensed by the Food and Drug Administration for sale in interstate commerce (as new drugs). This gives opportunity for the medical profession to be informed about the drugs before they are exploited. No firm has submitted these drugs for consideration by the council.—J. A. M. A.

#### BRIGHT'S DISEASE

Richard Bright (1789-1858), lecturer on the practice of medicine and one of the physicians to Guy's Hospital, included in his *Reports of Medical Cases, Selected with a View of Illustrating the Symptoms and Cure of Diseases by a Reference to Morbid Anatomy* (London: Longman, Rees, Orme, Brown and Green, 1827) the results of his investigations of the pathologic conditions associated with albuminous urine. Their epoch-making character has served to attach his name permanently to the whole group of nonsurgical diseases of the kidney. The following quotation is taken from the introductory remarks of the author:

The different diseases of the heart and of the lungs on which dropsy depends, and the various changes to which the liver is subject rendering it a cause of impediment to the circulation, are still open to much investigation. . . .

There are other appearances to which I think too little attention has hitherto been paid. They are those evidences of organic change which occasionally present themselves in the structure of the KIDNEY; and which, whether they are to be considered as the cause of the dropsical effusion or as the consequence of some other disease, cannot be unimportant. Where those conditions of the kidney to which I allude have occurred, I have often found the dropsy connected with the secretion of albuminous urine, more or less coagulable on the application of heat. I have in general found that the liver has not in these cases betrayed any considerable marks of disease, either during life or on examination after death, though occasionally incipient disorganization of a peculiar kind has been traced in that organ. On the other hand, I have

found that where the dropsy has depended on organic change in the liver, even in the most aggravated state of such change no diseased structure has generally been discovered in the kidneys, and the urine has not coagulated by heat. I have never yet examined the body of a patient dying with dropsy attended with coagulable urine in whom some obvious derangement was not discovered in the kidneys.

—N. E. Jour. Med.

#### "SENATORIAL MINDS"

Under the heading "Statesmanship or Demagoguery," the *Pittsburgh Medical Bulletin* of June 10 published an article dealing with the recent hearing in Washington on Senate Bill 1620, the so-called Wagner National Health Bill, at which representatives of the A. M. A. testified.

The article records briefly some of the statements made by A. M. A. witnesses and some of the heckling questions or statements made by some member of the Senatorial committee.

Following are some typical examples of how some Senatorial minds function especially if they are biased or the statesman thinks it wise to speak for the record:

"Ah, doctor, then your association is not in favor of 'poor' boys receiving a medical education, and stands for the continuation of the present system of educating the sons of the well to do?"

"How better can these states (i.e., southern and western states) seek the return to them from Boston of money filched from the natural resources of these far removed states by northern and eastern capitalists?"

"Why, doctor, don't you know that in the largest city in my state men drop on the street and die like flies from silicosis?"

"I suppose, then, if we would permit your association to name the personnel you would be satisfied to help us to amend this bill."

The writer of the article from which the above were taken states that he "finds no reason to alter his sincere belief that the credited author of the under discussion and the majority of the committee who were present remain definitely committed to the current federal administration's program of extravagant spending of the people's money for increasing health, diminishing agricultural and manufactured commodity production, increased taxes and diminished per capita wealth."

He puts the timely and pertinent question: "After reading the following paragraphs, (those quoted above) what do you think?"

We might answer by saying: It's about time for everybody, including the doctor, lawyer, merchant, chief, etc., to begin to think—better yet, to act.

—Ohio St. Med. J.

#### ULTRA VIOLET THERAPY

##### Indications

Ultraviolet irradiation has been recommended for such a ridiculously large variety of diseases that



it is absurd to name them all, or even to imagine that this agent is really of value in them all. However, there are a few diseases where the use of ultraviolet radiation is scientifically correct and a number more where its use is supported by enough clinical evidence to be impressive.

1.—*Rickets, Infantile Tetany or Spasmophilia, and Osteomalacia*: The well-proved ultraviolet effect upon calcium metabolism, by the formation of vitamin D, makes its use rational in these conditions.

2.—*Tuberculosis*: Most authorities agree that ultraviolet radiation is useful as an adjunct to the usual treatment (rest, food, etc.) in *extrapulmonary tuberculosis*. This includes tuberculosis of the bones or joints, of lymph glands, of the peritoneum and intestines, and of the genito-urinary system.

In some selected forms of chronic pulmonary tuberculosis many workers think that ultraviolet therapy is indicated, while others believe that it is contraindicated in all forms of pulmonary tuberculosis.

3.—*Erysipelas*: In my opinion ultraviolet irradiation is the method of choice in the treatment of erysipelas. The mode of action is not yet understood, but the clinical results can no longer be doubted. We have treated more than 500 cases by this method, with very satisfactory results.

However, it is extremely important that *heavy doses* of ultraviolet be given in the treatment of erysipelas, from six to twenty erythema doses being used, according to the type and efficiency of the lamp employed.

4.—*Certain Skin Diseases*: Many dermatologists employ ultraviolet as an aid in the treatment of certain skin affections. Among these may be listed lupus vulgaris, scrofuloderma, pityriasis rosea, psoriasis, acne vulgaris, adenoma sebaceum, erythema induratum, and alopecia areata.

5.—*Indolent Ulcers*: Some well-controlled work has indicated that ultraviolet is of value in the treatment of indolent ulcers and to promote the healing of wounds in general. This includes its use in the treatment of chronic draining sinuses, decubitus ulcers, and other such conditions, when it is possible to reach the affected areas with ultraviolet radiation. It is important to use *small doses*.

6.—*Burns*: Following extensive burns, the healing period may be greatly shortened by the use of ultraviolet radiation, according to Peck.

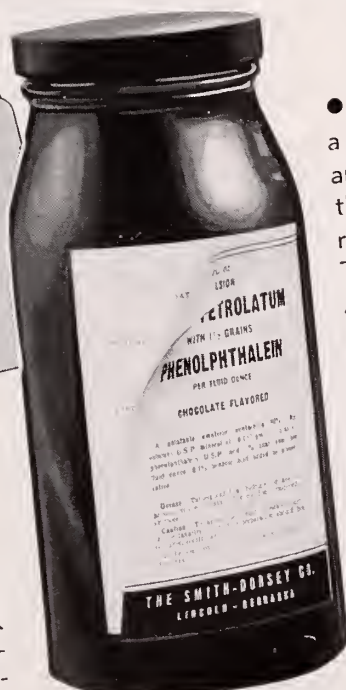
7.—*Tonic Ultraviolet*: In many chronic diseases, where malnutrition or deprivation of sunlight due to hospitalization is a factor, the use of ultraviolet radiation is indicated for its tonic and psychologic, as well as antianemic, effects. It may also aid in

# New!

## Announcing A CHOCOLATE FLAVORED EMULSION OF LIQUID PETROLATUM

### Council Accepted

● Emulsion of Liquid Petrolatum Chocolate Flavored is Council accepted. A PRESCRIPTION PRODUCT DESIGNED ESPECIALLY FOR THE PHYSICIAN (note prescription label on the bottle). And it may be obtained without phenolphthalein — or with 5 grains or 1½ grains to the fluid ounce.



● For patients required to take a mineral oil emulsion over any length of time—prescribe this Emulsion of Liquid Petrolatum Chocolate Flavored. There is no oily after-taste! And it has the inviting appearance and flavor of a delicious chocolate desert. Your patients do not rebel against it! This product contains 60% Liquid Petrolatum U.S.P. and 1% agar agar.

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the prevention of bedsores. In this group may be included sufferers from arthritis of any type, paralysis, multiple sclerosis, neurasthenia, hemiplegia, and many other chronic conditions.

#### *Contraindications*

The use of ultraviolet radiation is generally agreed to be contraindicated in active and progressive forms of pulmonary tuberculosis, hyperthyroidism, diabetes, highly nervous people, patients with advanced cachexia or inanition, and aged people with acute or chronic nephritis or myocarditis. It is also contraindicated in certain skin diseases. These include: all forms of generalized dermatitis, lupus erythematosus, herpes simplex, erythema solare perstans, xeroderma pigmentosum, hydroaestivale, freckles, atrophy, keratoses, and prematurely senile skin.

—Minn. Med.

#### OCULAR ENDOCRINOPATHY

There is no doubt that many eye diseases are a result of a disturbance or disease of the glands of internal secretion. Some of them, like diabetic retinopathy and proptosis in exophthalmic goiter are universally recognized to be on that basis. We are likely to forget, however, that others such as iridocyclitis, idiopathic blepharospasm, accommodation insufficiency and many others may also be caused by an endocrine disturbance. It would be well if an examination of the endocrine system

were made part of the routine physical examination when searching for a possible systemic cause of diseases of the eye such as iridocyclitis, papillitis, retrobulbar neuritis and others. The ophthalmologist should also bear this etiological factor in mind when treating intractable cases of asthenopia, epiphora, blepharospasm, recurrent chalazia and other conditions that persist in spite of the usual medical management. In some of these the endocrine disturbance is the actual cause of the eye disease, while in others it throws the reparative defense mechanism out of equilibrium so that the usual medication is of no avail.

—Ill. Med. Jo.

#### BOOK NOTES

MANAGEMENT OF OBSTETRIC DIFFICULTIES: Paul Titus, M D., Obstetrician and Gynecologist St. Margaret Memorial Hospital, Pittsburg; Consulting Obstetrician and Gynecologist, Pittsburg Homes and Hospital, Homestead, Pa.; Secretary American Board of Obstetrics and Gynecology. Pp. 968 including index. Cloth. Illustrations 368 with 5 color plates. 2nd edition. 10.00. St. Louis, The C. V. Mosby Co. 1940.

Many new things of importance are found in this edition. The reader's interest is at once aroused in the up-to-the-minute discussion of causative factors in sterility in the opening chapter, and the detailed treatment of sterility in the next chapter, is sustained in the following section on modern

## SILVER PICRATE

*Wyeth*

HAS SHOWN A CONVINCING RECORD\* OF  
EFFECTIVENESS IN ACUTE ANTERIOR URETHRITIS  
due to *Neisseria gonorrhoeae* • *Trichomonas vaginalis*  
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Silver Picrate is a crystalline compound of silver in definite chemical combination with picric acid. Dosage form for use in anterior urethritis: Wyeth's Silver Picrate Crystals in an aqueous solution of 0.5 percent.

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Complete literature on Silver Picrate as used in genitourinary and gynecological practice will be mailed on request.

\*"Treatment of Acute Anterior Urethritis with Silver Picrate," Knight and Shelanski, AMERICAN JOURNAL OF SYPHILIS, GONORRHEA AND VENEREAL DISEASES, Vol. 23, No. 2, pages 201-206, March, 1939.

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methods of diagnosis of pregnancy and on through the final section wherein there is an interesting discussion of analgesia and all the important routine procedures of obstetric care.

The newer treatments of puerperal infection with sulfanilamide and blood transfusions are discussed and more space is given to the newer concepts of post partum care and treatment. The patient receives not only a six weeks' but a six months' examination and many others when indicated. This includes the proper treatment of the cervix with the electric cautery or with conization when indicated.

At the end of the chapter on Contracted Pelvis there is an added section on x-ray pelvimetry. There is a short description of two leading techniques of roentgen pelvimetry and a paragraph on cephalometry as studied by S. H. Clifford of Boston which gives the obstetrician a knowledge of the size of the fetus in utero.

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*C. F. R.*

**HAND-BOOK OF TREATMENT**, by Edward A. Mullen, P.D., M.D., F.A.C.S., Instructor in Materia Medica, University of Penna. Medical School; Assistant Professor Pharmacology and Physiology, Philadelphia College of Pharmacy and Science; Lieutenant Commander, Medical Corps, U.S. Naval Reserve; Foreword by Horatio C. Wood, Jr., Professor of Therapeutics in University of Pennsylvania, Graduate School of Medicine; Professor of Pharmacology and Physiology, Philadelphia College of Pharmacy and Science; second revised edition; Philadelphia; F. A. Davis Company, Publishers, 1940, \$4.50.

This book contains a great wealth of practical material—in 707 pages—and yet it is not bulky; an inch or a shade more in thickness. The covers are semi-flexible. It is designed for easy reference. The material is such that the practitioner will wish to keep the book on the desk for frequent use. If one wishes a prescription for eczema, worms, rheumatism, pellagra, diarrhea or any other malady, he will find the very latest by turning through the pages; all material is arranged alphabetically.

The appendix contains a large amount of useful information which might not properly belong in such a volume except to add to its practicability. Among the subjects dealt with are: intravenous and hypodermic medication and formulae; formulae for fluid foods; diet lists; fractures, dislocations and sprains; hints on prescribing; chart of eruptive contagious diseases; table of differential diagnoses; physician's dose table; weights and measures; comparison of thermometers; female pelvis and uterus measurements; table for calculating the period of uterogestation; table for conception periods for 21- and 38-day menstrual cycles; hemor-



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**ELMER AND ROSE-PHYSICAL DIAGNOSIS**, by Harry Walker, M.D., F.A.C.P. Associate Professor of Medicine, Medical College of Virginia, Richmond, Virginia. 8th Edition. Cloth. Price? Pp. 792, with 295 Illustrations. St. Louis, C. V. Mosby Company, 1940.

Rose started it, Elmer rearranged it and rewrote it, and now the torch is held by Harry Walker—and held high.

It is an excellent work representing a complete summary of the application of the old as well as the newer understanding of clinical findings. It is a large book (better than 4 pounds), but there is little or nothing that might safely be omitted. But avoidance of prolixity would about cut it in half (Cf. p. 345, first two paragraphs). The book would be less impressive but more usable.

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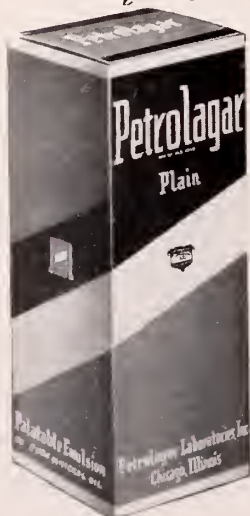
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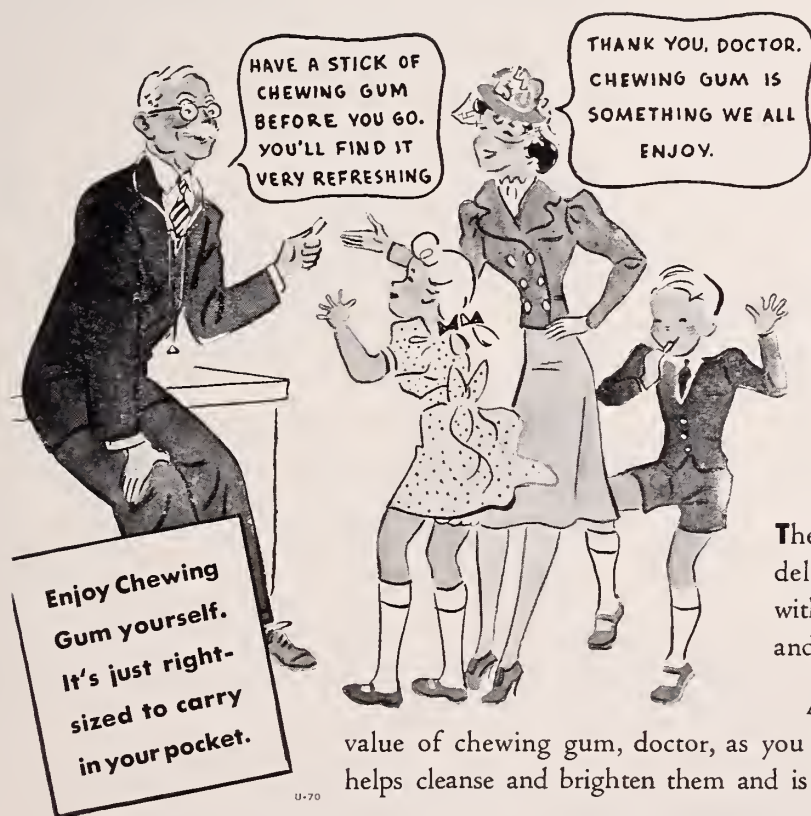
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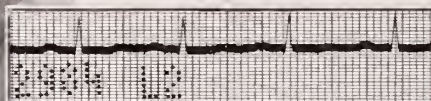
# STUDIES IN THE AVITAMINOSES



This page is the sixth of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A full color, two-page insert on the same subject appears in the May 25 issue of The Journal of the American Medical Association.

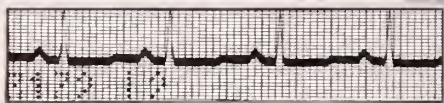


Teleoroentgenogram, at left, of alcoholic patient with severe thiamin deficiency, marked cardiac dilatation, congestive heart failure. X-ray below, taken after three weeks of thiamin chloride therapy, shows marked reduction in cardiac size. Patient received no digitalis.

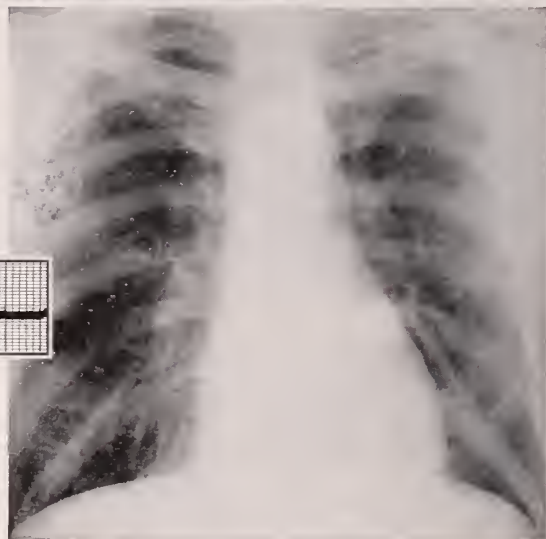


Electrocardiogram on admission (Lead 2). Note the low voltage of the QRS complexes and of P and T waves. (Left)

After three weeks of thiamin chloride therapy. Note increased voltage, return of P waves. Later tracings showed normal T waves. (Lead 2)



Courtesy of Henry Field, Jr., M.D.,  
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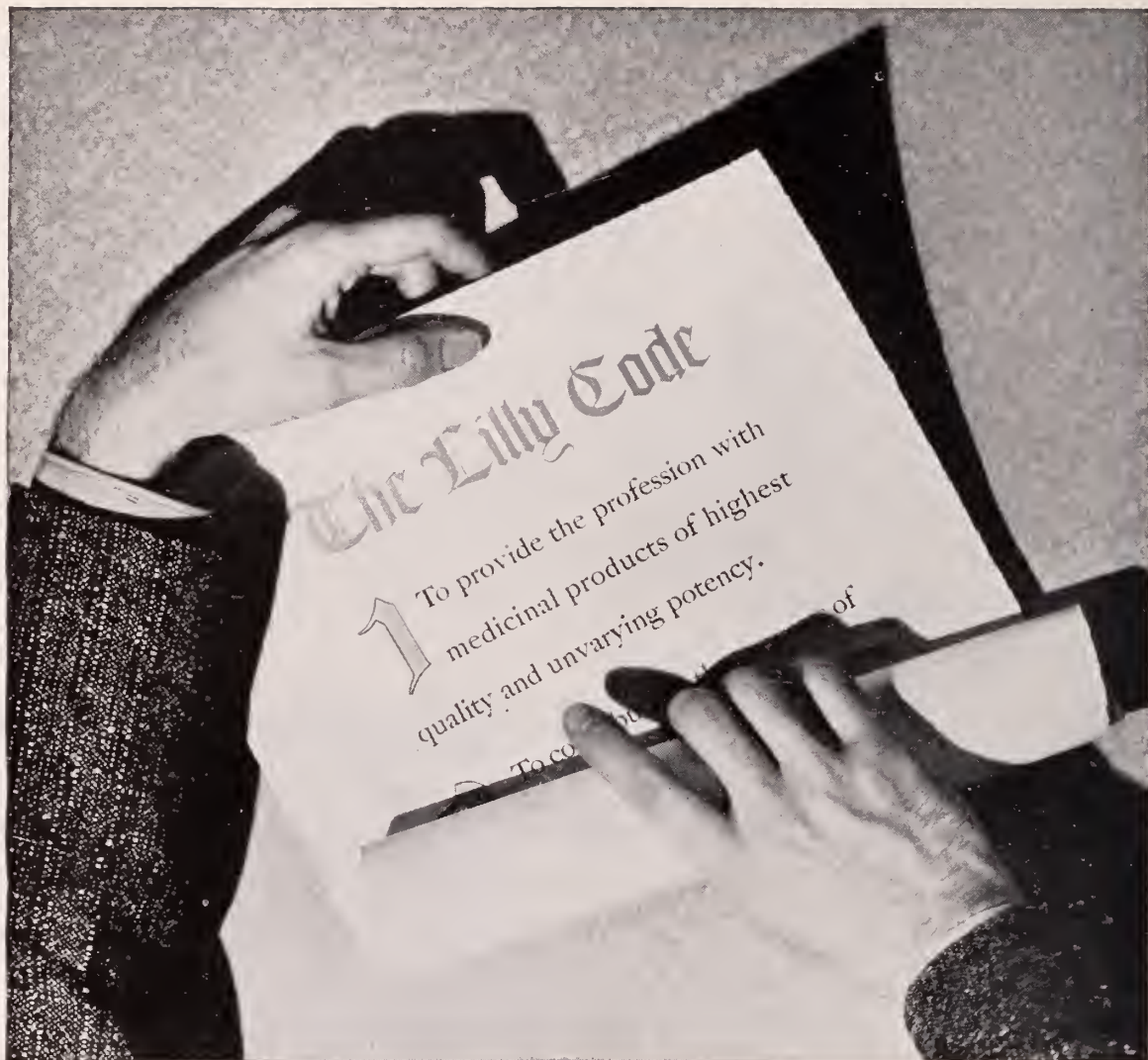
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- ☐ Proc. Soc. Exp. Biol. and Med., 1934, 32, 241-245—"Pharmacology of Inflammation: III. Influence of Hygroscopic Agents on Irritation From Cigarette Smoke."
- ☐ N. Y. State Jour. Med. 1935, 35-No. 11,590—"Irritating Properties of Cigarette Smoke as Influenced by Hygroscopic Agents."
- ☐ Laryngoscope, 1935, XLV, No. 2, 149-154—"Some Clinical Observations on the Influence of Certain Hygroscopic Agents in Cigarettes."
- ☐ Laryngoscope, 1937, XLVII, 58-60—"Further Clinical Observations on the Influence of Hygroscopic Agents in Cigarettes."

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VOL. XXIV

EL PASO, TEXAS, JUNE, 1940

No. 6

## The Present Trend of Medical Economics\*

W. B. CANTRELL, M.D.

*Gallup, New Mexico*

I wish to take this opportunity to express to the membership of the New Mexico Medical Society my sincere appreciation and thanks for the honor to serve as your President. The honor is one that I treasure and I trust that my work for organized medicine during my incumbency will be of such a nature as to prove in no uncertain way my deep and lasting gratitude. I am fully cognizant of the responsibilities attached to the office and will endeavor to carry out the aims and desires of the members to the best of my ability.

This society has shown a normal growth from year to year, and it is my hope that I can reach in some manner every one of the physicians in New Mexico who have not affiliated with our organization.

### GOVERNMENT CONTROL

In earlier times the chief activities of a medical society were scientific and social. Today a different situation exists. Now the whole world seems involved in a maze of doubt, uncertainty, and dissatisfaction. Economically, politically, socially and scientifically, we are in a state of unrest. One of the major dangers facing medicine today is State control. For generations, physicians have been among the most independent of all professions. They controlled all their activities, solved their problems, and totally dominated the medical field. Today, political and economic forces are more and more encroaching on the field of medicine. A recent assumption is that supervision of public health is a proper state function and there is no indication as to how far this supervision may lead.

It is my hope that this session of the New Mexico Medical Society will result in some definite basic plans for the improvement of the status of the medical profession.

All of us realize that the science of medicine has progressed very rapidly in the last ten or fifteen years or more; that the technics of medical service have changed mightily. We are glad of these improvements and the way in which our New Mexico physicians have kept in the van of progress. But, do all of us apprehend clearly the changes in the practice of medicine, in the distribution of medi-

cal service to the people, these changes that are in operation now, and the revolutionary alterations and substitutions for medicine which are being loudly recommended and vigorously lobbied, in and out of the national capitol?

Before 1929, that sad year of inverse fortunes, the medical profession performed its priestly service to the poor, out of the largess of its bounty. The State was delighted to throw its burdens of medical service on the willing physicians. After that great financial squeeze play, the poor became too great in multitude and the multitude of physicians became so poor that the State was forced, reluctantly to be sure, to take over in part its responsibility of furnishing indigents with necessary medical care. To many physicians this represented the first great change in medical service, as they had overlooked, because it did not affect their private practices too closely, the socialization of medicine in the State care of the insane, the tuberculous and the crippled and the afflicted children.

Our own experience shows that Government, yes, that very same Government which boasted, "We planned it that way", has been remarkably penurious in providing medical care for those on the W.P.A. rolls, or the blind or dependent children or the decrepit recipients of old age assistance who above all others require generous amounts of medical service.

In the face of this deplorable situation, it is most startling and incongruous to read the plans of the various handsome young men in Washington, who are endeavoring to make their name and fame by concentrating their efforts on putting over a great new national health program, including public health work, hospital building and health insurance! "Absurd", you say? Not at all. These modern glamor boys are deadly serious in their emulation of Bismarck and Lloyd George, and therefore the whole scheme is dangerous—perilous to the health of the people and to the thread of Democracy in our land. The plan of socialized medicine known as Senator Wagner's National Health Program has not its roots in the democratic principles which have made this country great. The answer to the nation's health needs does not lie in a Fascistic philosophy which, like poison gas,

\* Presidential Address, Annual Session, New Mexico Medical Society, Albuquerque, May 27-29, 1940.

spreads and injures and kills all and everything in its ever-widening path.

Ambition should not be fed on the health of our people. Further, Government must assume its rightful responsibility for the care of those on the welfare rolls, but there must be a line beyond which Government must not step without usurping personal responsibility.

#### MEDICAL CARE PLANS

No one but a hopeless idiot would argue that all is perfect in this best possible of worlds. Abuses there are, misery thrives along Park Avenue and Railroad Alley alike, tears flow in many a wretched home. Today, partly because of rapid methods of communication, people are more than ever aware of widespread despair. But yesterday it was likewise present.

Many men and women with big hearts are devoting their lives in the service of their unhappier fellows. Various schemes are advanced for partial alleviation of the lot of the unfortunates. So many of these plans are launched with high hopes, sometimes on oceans of prayers. It is tragic to acknowledge that to date only failure has come to most of these moves for the betterment of man.

Schemes for the better distribution of competent medical care have of late occupied prominence in the public eye. Most of these have been based upon revolutionary concepts; many have subsequently foundered on this shoal. The ideal plan for medical help for all the population has not yet been conceived. Perhaps one day experimentation of the intelligent sort, free from acrimony, divorced from politics, may point the way. To date unbiased judgment must decide that the time-tried methods of private, individualized American medicine is far and away the best system yet devised. It isn't just coincidence that a free, untrammelled American system of medicine has, during the short life of this Republic, increased the life expectancy of its citizens from 35 to 62 years.

Experimentation in new forms of distributing medical services has been taking place for many years throughout the United States. Thus, today it is possible to find a large number of different types of medical plans operating under various organizations or agencies. There has never been an accurate and complete enumeration of these plans; it is known that there are in operation more than 75 group hospitalization plans, some 54 hospital insurance companies, about 20 flat rate hospital plans, at least 2,000 industrial medical care services, at least 500 medical and hospital benefit organizations, about 24 union sick benefit funds and fraternal plans operating on a nationwide basis, about 300 private group clinics, at least 300 college and university student health services and in at least 20 states an unknown number of plans designed to assist portions of low income farm families.

Each of these plans must have the participation of the medical profession. In addition the

physicians themselves are operating more than 150 medical care plans and are considering the organization of approximately 120 more.

In many instances the medical profession has opposed some of the methods of providing medical service for the reason that experience has shown the impossibility of providing good and sufficient medical care under such arrangements. In other instances the proposals have met with prompt and wholehearted approval as representative of the most satisfactory methods thus far found to provide good medical care for the conditions or communities concerned.

The medical profession as represented by the 110,000 physicians who constitute the American Medical Association have never assumed a rigid or antagonistic attitude toward experimentation in the distribution of medical services when it could be shown that the services could be supplied satisfactorily under the proposed system without a deterioration of medical practice for all the people.

Compulsory sickness insurance, which has been adopted for a large proportion of the people of various foreign countries is no new proposal for the alleged protection of these people against the cost of illness. It was first proposed by Bismarck in 1883 and has since affected to some degree a large part of the civilized world. It may be significant that the great democracies have been the last to be attracted by the lure of sickness insurance or state managed medicine.

No advantage can be gained from criticism of a country for having adopted a system of state managed medicine, but a critical analysis of these systems should be helpful in determining whether such methods are preferable to the free and independent practice of medicine, such as that which exists in the United States.

After acknowledging all the advantages which may have accrued to the peoples of foreign countries from their present systems of state managed medicine, as compared with their previous methods of medical practice, the medical profession of the United States is unwilling to foster a system of compulsory sickness insurance because:

1. The accompanying complicated bureaucratic system has no place in a democratic state.
2. It would undoubtedly set up a far reaching tax system with great increase in the cost of government.
3. The burden of the system is distributed over the low income class, which is least able to bear it.
4. Diagnosis and treatment are mechanical and superficial.
5. Medical care for the indigent is omitted, and the problem of serious and prolonged illness is not solved.
6. The control over medical service is placed in the hands of unqualified non-medical individuals and organizations.
7. Such a system of medical care would lend itself to political control and manipulation.



The American Medical Association has never been unmindful of the necessity of constructive changes in the methods of organizing medical care or in the appropriate functions of the government in protecting the health of the people. At its first meeting in 1847 it urged the establishment of "state medicine", a term which was used at that time to describe what later became known as public health. The organized medical profession has always used its influence for the establishment and proper administration of state and local health departments. It has been more than sixty years since the American Medical Association first advocated the establishment of a National Department of Health, with its head a member of the Cabinet. For many years the Association endeavored to secure the coordination of federal health activities through such a department, and the 1938 special session of the House of Delegates again recommended the establishment of a federal health department with a secretary who shall be a doctor of medicine and a member of the President's Cabinet.

The National Health Conference was called in Washington on July 18-20, 1938, to consider the National Health Program. This program which was presented with little opportunity for thorough or dispassionate discussion or modification was based largely on a survey conducted by the United Public Health Service through the use of W.P.A. clients. The accuracy of many of the basic conclusions of the survey is open to strong suspicion.

Instead of presenting an unfounded opposition to schemes of compulsory sickness insurance the American Medical Association has given to such schemes more study, over a longer period, than the individuals or institutions that advocate such systems of insurance. This study, which has covered all existing systems throughout the world, has led to the conclusion that any scheme by which medical service is treated as a commodity that can be purchased wholesale by governmental or lay organizations and distributed at retail to patients results in a superficial service that not only delays the conquest of disease but actually increases some forms of sickness and has not been shown to be as helpful as other methods in reducing mortality.

#### COMMENT

Those who talk so glibly of making over this profession of ours—this profession rich in traditions; this profession which has attained such noble worth; this profession surfeited by kindness and sympathy; this profession whose only pass words are mercy and pity—lost sight of the art of medicine. They would, by a stroke of the pen, destroy this almost divine principle; they would reduce all these human attributes of kindness, pity, and mercy, to a formula. They would put the matter on a business basis under the assumption that only scientific medicine need be applied to the sick in order to effect a cure. What an abysmal misunderstanding of the principles involved. What gross

injustice and what cruel denial would result, to many, many personalities. The art of medicine and its application must remain unchanged. Nothing must make unheard those words so often expressed by the sick, "Doctor, I'm so glad you have come". There is wrapped up in that one sentence the epitome of the medical art which has existed through the centuries. It is akin to the child who reaches out hands to his mother and finds solace and understanding in her arms.

The art of medicine has not changed. The pass-words of mercy and pity, are the same today as in the days of Hippocrates and the doctor of the old school. These qualities of the human soul must not die if the art is to exist. Would you have me suppose that they can be reduced to a business formula? Would you have me think that they can be turned on and off by a switch? I call you to witness, that this can no more be done without debasing the quality than one can stifle the love in the human breast for its Creator, without dwarfing the soul.

We have been called ungenerous, mercenary, illiberal and selfish. If to teach the principles of sanitation and hygiene; if to broadcast rules and programs of maintaining health, if to give freely the discoveries of science resulting in the eradication of suffering and disease; if refusal to patent new remedies or to keep them hidden and secret; if to maintain clinics and hospital wards without recompense; if to apply knowledge of preventive medicine to the wiping out of specific diseases; if constantly to diminish our private practice and business by the dissemination of all this knowledge—if all this be ungenerous, then, thank God, I belong to such a selfish group!

It would take divine wisdom to foresee the future but it only requires common sense to keep constantly before ourselves, before the public and before our legislators the necessity of maintaining unsullied whatever is noble and worthy of the medical art. The only guide we have for the future is experience. Experience is largely the record of our mistakes. Lord Byron said, "The best prophet of the future is the past". There is ample evidence in events of the past of the deterioration of medicine under political influence. There has been no particular dissatisfaction of the public with the present type of medical service.

When physicians in the United States become, if they ever should, mere robots of a huge national compulsory system of medical care, making diagnoses from card indexes and mechanical gadgets and prescribing treatment from prepared and numbered labels, and when patients become a mere collection of interesting human parts to be shunted from one corner to another of a medical repair shop for some heartless and pseudoscientific tinkering, America will have lost one of its greatest institutions—free and independent medicine—and the American people will have lost some of their most valuable human traits, namely confidence in, respect for, and reliance on the scientific men and

women who protect their health and prolong their lives.

It is up to all of us to help mould public opinion, by the spoken and written word, as to the importance of medicine, initiating and directing any plans which have to do with governmental control.

Whether we accept lay leadership in telling us how and for what, and when and on whom we shall ply the art of our science, rests with the membership of the New Mexico Medical Society, insofar as the commonwealth of New Mexico is concerned.

## Tumors of the Lips

GEO. W. JONES, M. D.

*Philadelphia, Pa.*

THE more important tumors of the lip are carcinoma, hemangioma, and lymphangioma. Of interest in differential diagnosis are syphilis (primary), herpes, inflammations, fissures, keratoses and leukoplakia, mucus cysts and adenomas, pyogenic ulcers, keloids, and papillomas. Sarcoma is rare, Richards<sup>1</sup> reporting only 1 case out of 355 cases of malignant neoplasms of the lip. Erosion of the lips at each menstrual period has been reported by Shelmire<sup>2</sup> in an admirable article devoted to non-surgical diseases of the oral cavity. An unusual case recently seen, a young negro with fibrous tumors of the nose and lips, was thought to have rhinoscleroma although having some characteristics of leprosy.

The lesion of syphilis is more frequently found on the upper lip<sup>3</sup>, the inception and growth are usually more abrupt than carcinoma, and spirochetes are noted on dark-field illumination. The age of the patient is normally younger than in carcinoma. Hemangiomas are usually self-evident. Lymphangiomas may be more confusing. I have seen two cases of swelling of the upper lip where angioneurotic edema had to be considered on account of the wide variation in size of the tumors at different times.

Irritation of the lip from sun and weather, ragged teeth, pipes, etc., has been blamed as being a predisposing cause of cancer<sup>4</sup>. Syphilis seems not to be the factor in lip cancer that it is in the tongue, Kaplan & Krantz<sup>5</sup> finding a positive Wassermann in only 1%. Leukoplakia and keratoses appear to be forerunners in a certain number of cases. An interesting survey of cutaneous irritation and cancer in the United States Navy has been made by Peller & Stephenson<sup>6</sup>. They found the incidence of lip and skin cancer in the Navy to be 8 times the normal, but also found that there were fewer deaths from other forms of cancer. They state that the exposure to sun, air, and salt water is conducive to cutaneous cancer but that, after cure of the lip or skin cancer, internal cancer developed less frequently than is usually seen. We know of the rarity of multiple primary carcinomas, Warren & Shields<sup>7</sup> reporting such occurrence in only 1.84% of cancer cases. Hanlon<sup>8</sup> at the Mayo Clinic has added 49 such instances. Would it be best, then, for young people to be exposed to cutaneous irritations which are not carcinogenous to internal sites, hoping that fewer would develop in-

ternal cancer? Is this a sort of vaccination or immunization? Are there here any processes comparable to those involved in active immunization, such as for smallpox, diphtheria, typhoid, etc.? We know, however, that our patients with cured cutaneous cancer must be watched constantly for the appearance of other skin carcinomas—would it be logical to assume that they might not develop carcinoma in other organs?

I am not satisfied that pipe or cigarette smoking bears any definite relationship to lip cancer. I check such history carefully in every case and am impressed with the fact that the great majority of patients have held their pipes at a different part of the lip than where the cancer is found. Kennedy<sup>9</sup> found that out of 246 patients, 140 habitually used cigarettes or a pipe but only 19 were in the habit of holding either at the site where the carcinoma started.

In patients with superficial lip keratoses, we can do one of four things—first, observe the lip at intervals for evidence of malignant change; second, destroy the keratoses with electro-coagulation; third, use one or two intensive treatments of x-rays<sup>10</sup>, or fourth, apply, if available, unfiltered radon<sup>11</sup>. For more advanced keratotic conditions unfiltered radon or radium is better<sup>11</sup>. In cases with some fissuring or superficial ulcerations which do not heal in a month, New<sup>12</sup> advises surgical removal of the affected areas. Patients, however, usually disregard abnormal conditions of the lip until a definite nodule, ulcerated more often than not, refuses to heal or increases in size. It is situated on the lower lip in about 9 out of 10 cases and is found preponderantly in males. Hall<sup>13</sup> had 93.7% males in his series and about 85% of the cancers were on the lower lip. In Kaplan's<sup>5</sup> cases males likewise accounted for 93%. Richards<sup>1</sup> reported only 6 cancers on the upper lip out of 335 cases. Park & LeFevre<sup>14</sup> saw cancer of the upper lip in only 3.5% of 589 cases. Their relation of males to females was 16.2: 1 for the lower lip and 4.25: 1 for the upper lip. In other words, carcinoma of the lip in men is almost always on the lower lip, while in women it is usually on the upper lip.

The few lesions, except one, that I have seen on the upper lip have been extensions around the commissure from the lower lip or seemed to be related more to the skin than the lip proper (ver-



million border). Why the upper lip is not involved more often I have no idea except that its surface is not so much exposed to the elements. If pipe or cigarette smoking were a real factor, we should see both lips involved equally. Have you ever tried to puff your smoke without employing both lips? The pipe "dawdler" and the cigarette artist who plasters the paper to the lower lip are certainly not of sufficient numbers to warrant serious consideration. Too, what is the greater irritative factor of the upper lip in women—are they forced to "bite their upper lips" more often than we males?

While clinical signs are usually diagnostic of cancer of the lip, it seems desirable to confirm with a microscopic diagnosis. For purposes of biopsy, Ewing<sup>15</sup> says the best method is a clean incision with a sharp scalpel. Electro-coagulation of the wound is frequently employed after the scalpel but its value can be only to stop bleeding. If the biopsy be removed by electro-surgery, care must be taken that heat changes do not make the pathologist's job too difficult. Theoretically it might be assumed that biopsies would enhance the chances of metastases. I have heard physicians state that they would prefer not to have biopsies performed on themselves. One would be inclined to be sympathetic to this attitude if it were definitely known that such assumption is truth, for the cure of an early carcinoma of the lip with no metastasis should be obtained in a large percentage metastasis. In a series of cases treated at the hospital of the University of Pennsylvania only 5% of those who developed metastases were successfully cured<sup>13</sup>.

The problem of lip cancer is, in general, the same as we have seen with cancer in other regions, namely, that of preventing and dealing with metastases. The exceptions comprise those cases in whom the primary lesion is quite large when first seen, having already involved the chin, cheek, or mandible, with extensive local destruction of tissue and infection. It seems that the cancers which cause the greatest amount of local destruction are less prone to give rise to metastases<sup>16</sup>, and when they do it is quite late (after 2-3 years<sup>11</sup>). They seem content to expend their energies in the environs, with little ambition to conquer distant fields. Contrarily, a carcinoma appearing quite small and non-destructive and which can easily be removed surprises us in 3 to 9 months with a metastatic gland in the neck. Distant metastases are rare, as is local recurrence<sup>17</sup>.

In view of the fact that it is those cases which show metastases that comprise the greatest number of deaths, we want to know what percent may be expected to show metastatic glands. Duffy<sup>18</sup> has analyzed 271 cases and found that 77.5% never showed metastatic glands, 10% had operable, and 4% inoperable nodes when first seen, while 8.5% developed nodes later. Metastatic glands were found, then, in 22.5% of his cases at some time. Kennedy<sup>9</sup> found that 60% of his cases showed pal-

pable nodes (this seems rather high) although only 33% were metastatic in nature. The remaining were inflammatory.\* In addition, he found that 14% showed metastases even though no nodes could be palpated, thus raising the percentage having metastases to 47% or almost one out of two. We have, then, two groups of cases with metastatic percentages of 22.5 and 47. We must expect that only a very few of these cases will survive five years, and, indeed, New<sup>12</sup> of the Mayo Clinic reports 25% dead, while Welch & Nathanson<sup>20</sup> report 48%, showing the close parallel to the percentage range for metastases.

The usual age for lip cancer is 55 to 65 but cases have been reported from 20 to 95. The cancers which cross the mid-line of the lip will give more trouble than those which remain on one side, as the former have greater potentialities for bilateral metastases. Although we see some lip cases late in the course of the disease, as a rule these patients consult a physician earlier than those with cancer of any other site, except possibly of the skin. Richards<sup>1</sup> grouped his cases according to the size of the local lesion into 4 groups and found 74% in Group I, 18% in II, 6% in III, and 1.4% in Group IV. This is distinctly at variance with cervical and breast groupings, where by far the greater number of cases falls in Groups III and IV. This fact makes for better prognosis of lip over cervical or breast cancer. Too, it is unusual to find the more anaplastic grades of cancer in lip carcinomas, most types being cornifying, or Grades I and II. Boyd<sup>3</sup> states that he has never seen a Grade IV cancer of the lip. The degree of malignancy increases from the lips in front back over the tongue and into the pharynx.

#### TREATMENT

It is of no great importance whether the primary lip lesion be controlled by surgery, irradiation (Roentgen-ray or radium), or electro-coagulation, if completely eradicated. Lund & Holton<sup>21</sup> rightly state that every case of lip carcinoma must be decided upon individually. Dickinson<sup>22</sup> and Martin<sup>11</sup> conclude that there has been no great advantage apparent in any single method. Advocates of irradiation believe better cosmetic results are obtained. For advanced primary lesions I shall be tempted to use surgery in the future, as irradiation seems incompetent in these cases. Newcomet<sup>23</sup>, a pioneer in radium therapy, who has been mellowed by years of practical experience, says that the method with which one is the most experienced and skillful is the proper one to use.

Greater discussion prevails when we try to decide as to the proper treatment of the neck, either prophylactically or therapeutically. Should the neck be treated, if at all, before or after the primary lip lesion is attacked? In all this there is much to perplex the "seeker for truth". A survey, however, of

\*Bloodgood<sup>19</sup> has stated that the clinical diagnosis of metastasis from carcinoma of the lip is wrong more frequently than right. Hall<sup>13</sup> found that 3 out of 4 palpable glands were only inflammatory in nature.

the treatment of cancer in other sites (cervix, breast, rectum, etc.) reveals that the same problems, viz. those of the lymph drainage regions, arise to plague the patients and tax the resources of the physician. Pagani<sup>24</sup>, Jaycox<sup>17</sup>, and others prefer to use roentgen therapy of the lymph gland areas prophylactically even when no glands are found or suspected. Moreland<sup>25</sup> advises surgery for glands thought to be metastatic, but uses neither irradiation nor dissection if there are no enlarged nodes. Duffy<sup>18</sup> and Quick<sup>26</sup> believe that lymph glands serve as a barrier to the spread of cancer, the latter stating: "Up to a certain point, at least, cervical lymph nodes perform a conservative function and hence should not be disturbed, if avoidable, particularly in the presence of an active primary growth". It would seem that if we cannot cure palpable metastases by large amounts of irradiation, it would be useless to use a smaller amount prophylactically. Duffy uses interstitial implantation of filtered radon for control of localized metastatic nodes.

My experience with block dissection is quite limited but I am convinced that I will never advise bilateral neck dissection, as such a formidable operation carries a mortality of 11% in good hands<sup>9</sup>. In addition, there is the possibility of lymphedema of the parts above the dissection, as well as recurrences in the incision. Unilateral dissection is safer, with fewer complications. The following postulates by Duffy<sup>18</sup> give the Indications and Contra-indications for neck dissection:

#### INDICATIONS

1. Primary lesion is controlled
2. Primary lesion limited to one side
3. Primary lesion is shown to be of highly differentiated type
4. Cervical metastases are present and limited to one group of nodes or nodes in two contiguous cervical triangles
5. Capsule of nodes is not infiltrated by carcinoma
6. Opposite side of neck is free of metastases
7. No distant metastases
8. Patient is in good general condition

#### CONTRA-INDICATIONS

1. Primary lesion is uncontrolled
  2. Primary lesion extends to or beyond the mid-line
  3. Primary lesion is shown to be of indifferntiated type
  4. No metastatic nodes present
  5. Capsule of node infiltrated by carcinoma
  6. Cross or bilateral cervical metastases are present
  7. Distant metastases present
  8. Patient in poor general condition
- For a case to be operable all indications must be present.  
For a case to be inoperable only one contra-indication need be present.

In the inoperable neck cases, we have recourse to only two modalities, x-ray and radium. Interstitial radium or radon may be of value, but I have

seen very little lasting benefit from x-rays or the 4 gram radium bomb. Such cases recall to mind Chavelier Jackson's apothegm<sup>27</sup>: "Cancer is like putting out a house afire—easy early, impossible later".

#### American Oncologic Hospital

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## History of Treatment of Acute Fractures of the Femoral Neck

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THE scope of this paper is not to review all the literature to date on this subject, because it is so voluminous in form of papers and essays that the task would be far greater than we have time

to consider; so, therefore, it is proposed to present the sources of accepted forms of treatment as outlined in various text books on Fractures and Dislocations. It is also proposed to show the influence of certain outstanding men, and an attempt will be made to evaluate the time during which this influence lasted.

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My interest in this subject was aroused because a few years ago I was fortunate enough to obtain a copy of a Treatise on Dislocations and Fractures, by Sir Astley Cooper, which appeared in 1844. This copy was edited by his nephew, Bransby B. Cooper, and was published by the order of the Massachusetts Medical Society for the use of its Fellows. Prior to the publication of this particular volume, five London editions appeared between the years 1822 and 1842. Cooper was born in 1768 and died in 1842; altogether he published about 33 surgical papers. There is no doubt that Cooper was a master of description, because this particular work is a classic. We can pass over what he has to say about the causative factors producing this lesion, and will quote what he has to say in relation to union of femoral neck fracture:

"UNION OF THIS FRACTURE. Much difference of opinion has existed upon the subject of the union of the fractured neck of the thigh-bone. It has been asserted that these fractures unite like those of other parts of the body; but the dissections which I made in early life, and the opportunities I have since had of confirming these observations, have convinced me that fractures of the neck of the thigh-bone, of the patella, olecranon, condyles of the os humeri, and of the coronoid process of the ulna, generally unite by ligament, and not by bone. This principle I taught in my lectures for thirty years; and it is a most essential point, as it affects the reputation of the surgeon, as well as a subject of some interest in forensic medicine; for if these fractures unite like those in other parts of the body, the patient who remains lame after the treatment would undoubtedly have a right to seek redress from the surgeon at the hands of the law. I was called to a case of this fracture, in which, week after week, the medical attendant had been promising union, and the restoration of a sound and useful limb. After many weeks the patient became anxious for further advice; I did all in my power to lessen the erroneous impression which had been made, by telling the patient that she might ultimately walk, although with some lameness; and taking the surgeon into another room, asked him upon what grounds he was led to suppose there would be union; to which he replied he was not aware but that the fracture of the neck of the thigh-bone would unite like those of other bones of the body; the case, however, proved unfortunate for his character, as this patient did not recover in the usual degree."

In the following reference it does not require much imagination to realize that Cooper very aptly described the so-called sheering force of which we nowadays hear so much.

"In the examinations which I have made of transverse fractures of the cervix femoris entirely within the capsular ligament, I have only met with one in which a bony union had taken place, or which did not admit of a motion of one bone upon the other. To deny the possibility of this union, and to maintain that no exception to the general rule can take place, would be presumptuous, especially when we consider the varieties of direction in which a fracture may occur, (sheering forces) and the degree of violence by which it may have been produced. For example, when the fracture is through the head of the bone, with no separation of the fractured ends; when the bone is broken without its periosteum being torn; or, when it is broken obliquely, partly within and partly external-ly to the capsular ligament, I believe that bony

union may take place, although at the same time I am of opinion that such a favorable combination of circumstances is of very rare occurrence."

"CAUSE OF THE WANT OF UNION. Having thus explained what is the common result of these cases in relation to their want of union, I shall now proceed to state the reasons which may be assigned for the absense of bony union in the transverse fracture of the neck of the thigh-bone within the capsular ligament. The first reason is the want of proper apposition of the bones; for if in any part of the body the extremities of a broken bone be kept much asunder, ossific union will under ordinary circumstances be prevented.

"The neck of the thigh-bone when broken, is placed under similar circumstances; for, by the contraction of the muscles, it is no longer in apposition with the head of the bone, and is, therefore, prevented from uniting; if this, however, were the only obstacle, it might be argued that the retraction of the thigh-bone could be prevented by bandaging and extension, the truth of which cannot be denied; but it is scarcely possible, even for a few hours, to preserve the limb in exact apposition, as the patient, on the slightest change of posture, produces instant retraction, by bringing into action those powerful muscles which pass from the pelvis to the thigh-bone."

(Here is described the mechanism causing lack of apposition.)

"A second circumstance which prevents the bony union of these fractures, is want of pressure of one extremity of the broken neck upon the other, even though the limb preserves its length, and the fractured parts are consequently not much displaced. This want of pressure may arise in some degree from the excessive secretion of serous synovia which follows the accident; but principally from the action of the muscles which separate the broken surfaces. The influence of pressure in expediting bony union is well exemplified by the fact, that if two broken bones overlap each other, a superabundant formation of callus occurs on the side on which they are pressed together, whilst little or no change takes place on the other side. So also we find that, if the ends of bones be drawn from each other by the action of muscles, as sometimes happens in fractures of the os femoris tibia, os humeri, radius and ulna, union is not effected until the surgeon, by a strong leathern bandage tightly buckled around the limb, compels the bones to press upon each other, and thus support the necessary inflammation for the production of ossific union. When a transverse fracture occurs amidst muscles, those which are inserted into the fractured part of the bone have generally a tendency to keep the extremities of the bones together, with some few exceptions; but when a fracture occurs, as has been already stated, in the neck of the thigh-bone, the muscles have only an influence upon one portion of the fractured bone; and this influence serves to draw one part from the other."

"The third reason which may be assigned for the general want of union of this fracture is the almost entire absence of nutrition in the head of the thigh-bone when separated from its cervix, its life being supported by the ligamentum teres, which has only a few minute vessels ramifying from it to the head of the bone. It may be observed that the neck and head of the thigh-bone are naturally supplied with blood by the periosteum of the cervix, and that when the bone is fractured, if, as most frequently happens, the periosteum be torn through, the means of ossific action are, in consequence of such fracture and laceration, necessarily destroyed in the head of the bone. Scarcely any change, therefore, takes place in the head or neck of the



bone attached to it; no deposit of cartilage or bone similar to that in other fractures is produced; but the deposit which does take place, as may be seen in the plates of fracture of the neck of the thigh-bone, consists of ligamentous matter covering the surface of the cancellated structure, together with little patches like ivory on the head of the bone.

"The fourth reason which may be assigned for want of union by bone is the natural change of the cervix femoris in old age, the atrophy of its structure which diminishes its power of resistance, as well as its capability of restoration; together with the general want of constitutional vigor which always accompanies old age."

(Editorial Note). "There is yet another reason to which due weight should be given. The cellular membrane which surrounds ordinary bones is an important agent in the reparation of fractures. It is the medium through which blood-vessels are supplied to the periosteum, and it is the seat of a copious effusion of adhesive lymph, which lymph becomes organized and ossified, and constitutes the provisional callus which unites the fracture. But in fractures of the neck of the thigh-bone, the fracture is separated from the surrounding cellular tissue by the capsular ligament, and therefore the union cannot be effected by a provisional callus. Old age may also be considered as a cause of non-consolidation of the neck of the thigh-bone; for not only is there that difficulty of reparation inseparable from the advanced period of life at which the fracture occurs, but also that peculiar change which had taken place in the neck of the bone before the accident happened, rendering it impossible to conceive how under such circumstances re-union is to be expected, when in continuity, the neck of the thigh-bone had not vitality enough to maintain its natural integrity. I believe, therefore, it is a law of nature, the result of organization, which leads to a ligamentous union, and not the neglect of mechanical means, which prevents ossific consolidation in these cases, for it appears that callus is not formed in those situations where its presence would interfere with the motions of a joint. What would be the effects of a mass of callus protruding on the inner surface of a fractured skull? And is it not easy to see that the formation of callus in or near joints would tend to destroy the function of those joints? What degree of useful motion would remain in the knee or elbow if both surfaces of a fractured patella or olecranon threw out a projecting callus? We may say, therefore, that the cervix femoris is from its structure incapable of uniting by callus, like ordinary bone; and that, even if it were, the want of pressure and adaptation of the broken surfaces, the want of nutrition in the upper fragment, the previous atrophy of the part broken, and the age and debility of the patient, would be highly unfavorable for the union.—Ed."

Following the fourth reason for non-union the author continues to describe this fourth reason—

"The appearances which are found on the dissection of these injuries are as follows: The head of the bone remains in the acetabulum attached by the ligamentum teres; there are, upon parts of the head of the bone, very small white spots like ivory."

It is during the past few years in which the description of this ivory-like appearance in radiographs has become quite common, and signifies the death of the head of the femur.

Another very significant foot-note, which is editor's opinion, is found on the bottom of page 135, and is as follows:

"I am of Sir Astley Cooper's opinion that frac-

tures of the neck of the thigh-bone within the capsular ligament, do not, excepting under peculiar circumstances, unite by bone, and that the exception occurs only when the periosteum and reflected membrane of the neck of the bone has not been torn through, and when, therefore, the fractured extremities are not separated from each other. I maintain that there are several circumstances tending to prevent the ossific consolidation of a fracture of this part of the thigh-bone, or, in fact, of the articular extremity of any long bone within the synovial capsule. With respect to the neck of the thigh-bone, a very principal cause of its non-consolidation by bone is the advanced age at which it becomes obnoxious to fracture, through that peculiar change which the part undergoes at this period of life, without any apparent cause; but which renders it incapable of sustaining the superincumbent weight, and even in continuity insufficient to maintain its function; therefore, it may be fairly supposed, when broken, incompetent to set up a restorative action. The want of surrounding tissues to assist in the reparation of the fractured neck of the thigh-bone is another great cause of the want of union. In the fracture of the shafts of the long bones the surrounding structures all assist in forming the provisional callus, and the temporary consolidation is perfected by them; the permanent union of the fractured bone not being completed until the contraction or shrinking of the provisional callus has brought the fractured ends of the bone into perfect conjunction; a condition which cannot be effected when no provisional callus is formed, as in fractures within the capsular ligaments of joints.

"Moreover, so soon as the fractured portions of the neck of the thigh-bone are separated, all supply of blood must be cut off from that portion attached to the head excepting to its articular cartilage, which does not seem capable of maintaining ossific deposition; and hence arises a preventive to ossific union of the neck of the thigh-bone. And lastly, let it be remembered that all articulating extremities of the long bones are attached to their shafts or bodies by epiphyses, structures which are subjected both during growth and reparation to quite different laws from those which regulate the development and functional power of the osseous system generally. I do not believe in bony union of the neck of the thigh-bone, where solution of continuity has occurred; and no cases have been published which militate against this opinion. But if the fractured surfaces be not separated, then their consolidation is effected in the same manner as when shafts of long bones have been ultimately brought in contact by the shrinking of a provisional callus; or as flat bones repair from the fractured edges.—Ed."

"TREATMENT.—With respect to the treatment of fractures of the neck of the thigh-bone within the capsular ligament, various are the means to which I have had recourse, and which I have known resorted to by others, for the purpose of producing union in this accident, but all without avail.

"One mode has consisted in placing the fractured limb over a double inclined plane, by which a regular and constant extension is preserved; and, by raising the planes at the knee, this extension may be increased to any degree that the surgeon may require, or the patient can bear; at the same time, a bandage is applied around the pelvis and upper part of the thigh, to bring the neck of the bone, as much as possible, in approximation with the head from which it has been separated; and this extension, with pressure, has been steadily preserved for three months. With respect to the patient's body, it has been placed at an angle of forty-five degrees.



"A second method has consisted in placing a board at the foot of the bed, upon which the foot of the sound limb is supported, so as to prevent the descent of the body in the bed; the other limb is then extended as much as possible, and a weight, appended to the foot, is suffered to hang through a hole in the board over the end of the bed, in order to support the extension with regularity and steadiness for several weeks.

"In a third method, the patient has been placed in bed with both limbs extended to the utmost possible degree, and then the two feet have been bound together by a roller, passed from the foot on the injured side under the sound foot, so as to make one limb steadily preserve the extension of the other. Or this may be effected by an iron plate affixed to the shoe on the sound foot, with a screw passed through a hole in the plate, and having a band fixed to the other foot, which may be tightened by turning the screw, and the foot, by this means, be kept constantly extended.

"A fourth mode employed for this purpose has been the application of Boyer's splint, with the intention of extending the limb from the pelvis; but this splint, though it answers well for fractures of the thigh under ordinary circumstances, has a tendency to prevent union in those fractures which occur at the upper part of the bone, by the pressure of its band upon the inner and upper portion of the thigh."

Discussing further the question of treatment, a description of a splint, known as the "Hagedorn splint", which, undoubtedly, many of you men are familiar with, and which would seem to be mechanically correct, but, physiologically speaking, it was not satisfactory. This splint also may have been the fore-runner of the "Thomas splint", because it utilizes the tuberosity of the ischium as a point of contact to produce counter-pressure against extension. Mr. Cooper, in commenting on the attempts at cure, and the consequent danger to the life of the patient, considers the question of hoping that the musculature, particularly the ligaments, would become strong, allowing weight bearing, and in this respect there is an editorial note at the bottom of page 142, in which reference is made to the obturator externus muscle and its tendon. (Editorial Note) "The obturator externus muscle and its tendon under these circumstances become excessively increased, so as to support the weight of the body, and the capsular ligament also becomes much thickened. Sometimes the broken neck sinks into the trochanter minor, and thus acquires additional support." In this relationship the speaker is of the opinion that the obturator externus muscle is a great offender in the question of non-union, and I have brought a specimen showing its attachment in its relation to the neck of the femur, and which I will show you. It is rather interesting to note that in the subsequent texts examined I have failed to find a satisfactory mention of the relation of the obturator externus muscle to the question of non-union in femoral neck fractures.

Thus we proceed to note that with such accurate descriptions of the various phases of this problem it is hardly reasonable to assume that subsequent generations of observers would outstrip Cooper's

description. However, we will turn to examine what subsequent authors of text books had to say.

The first to be examined then is Hamilton, whose work ran through eight editions, the first appearing in 1860 and the last in 1891. Frank Hastings Hamilton was Professor of Surgery at the University of Buffalo. In the preface of his first book appears a very significant note, as follows: "The English language at this time does not contain a single complete Treatise on Fractures and Dislocations". If you remember, Cooper's work was simply a series of lectures, and not classified as a definite text on Fractures and Dislocations. Hamilton's book (and I am fortunate enough to possess three different copies, the first, third and fourth editions), shows the influence of Cooper by continual references throughout the text and the subject matter copied in toto, with acknowledged reference to the source of this material.

The next text examined was an original essay on "The Hip", by Henry J. Bigelow, Professor of Surgery at Harvard Medical School, and is essentially a work on dislocations. In it is described in much detail the "Y" ligament of Bigelow. This book is very interesting in relation to dislocation, but is rather disappointing when fractures of the neck of the femur are considered, and there is practically no reference to any outside source in Bigelow's text.

The next interesting text examined was written by Philip S. Wales, a surgeon in the United States Navy. This work appeared in 1867, and definitely was the influence of Cooper's teachings.

In 1893, Royal Whitman of New York, although he never published a text book on fractures, began to revolutionize this problem by introducing the abduction method. There is no doubt in my mind that Cooper influenced Whitman to a very marked degree, and Whitman, in his curious investigative mind, was desirous of obtaining better end results. It is possible to assume that Whitman's contribution to this subject may have been a turning point away from Cooper's influence, because of the practically universal vogue of the adoption of the Whitman method.

Another important factor which may have contributed in a very marked degree was because the roentgen ray had come into existence, and examination of patients by this method enabled the observers to determine the relationship of fractures more satisfactorily, thus equipping the surgeon with a new chance to observe the result of his clinical evidence.

In my search for this source of material I was unable to find any other text book worth while, until 1910 when Stimson's work on fractures appeared. It was now almost twenty years after Whitman made his contribution. A quotation from Stimson in which he criticized Senn, Southam, and Whitman, is as follows:

"Forcible correction under ether, recommended by Senn, and recently again by Southam and Whitman, should be limited, in my opinion, to the rela-

tively young and robust patient with fracture at or near the base of the neck, and even in them the same results can be obtained by continuous traction. The generalization of this hasty forcible correction by wide abduction has of late been urged, it seems to me, with more zeal than attention to the anatomy of the region and pathology of the injury. No abduction which is wider than a normal neck will permit can recreate a normal neck. The alleged use of contact between the top of the great trochanter and the ilium as a fulcrum for such abduction is fanciful, no dissected hip that I have examined would permit the trochanter to be brought within an inch of such contact while the head remained in its socket, and even the less extreme manipulations seem to me to be dangerous in some, and futile in others, because of the lack of control over the position of the proximal fragment. Continuous traction can be made by weight and pulley (Buck's extension), or by Hodgden's suspended splint, or by a combination of the two, or in combination with a long side-splint or hip-splint. The details of their application are given in Chapter VII. If Buck's extension is used, the foot and leg should lie on a Volkmann's sliding rest, to promote comfort and oppose eversion of the limb, and a small firm cushion should be placed behind the trochanter. Direct pressure upon the outer aspect of the trochanter to press the fragments together can be made by a padded band about the pelvis. The weight varies from five or ten pounds in the old, to fifteen or twenty in the young adult. If Hodgden's splint is used, the traction can be made greater or less by changing the angle of the supporting cord; thus, in the old its upper attachment should usually be about a foot beyond the vertical (at a height of about 5 ft.) and more, if more traction is desired. The limb should swing just free of the bed, somewhat abducted. The Hodgden greatly promotes the patient's comfort and is generally to be preferred, I think, to the other methods of traction. In this statement I include its use for simple vertical suspension while traction is made by Buck's extension (combined suspension and traction). The attempt to secure union by operation, in fresh as well as in old cases, has been made many times since Lagenbeck's first and unsuccessful one. The first success was got by Franz König in 1875, by passing a metal pin through the trochanter, neck and head, and most subsequent ones have been got in the same way."

The next text was the first edition of Cotton, which appeared in 1910. The treatment at this time of unimpacted fractures of the neck of the femur was as follows:

1. Traction and immobilization.
2. Traction in the line of the shaft with lateral traction.
3. Traction with abduction.
4. Traction with abduction and with pressure on the trochanter.
5. Open operation with or without nailing.

Cotton apparently was not influenced by Whitman, and he mentioned about the use of a nail in open operations, but was not very warm in his attitude in that respect.

The next text was Scudder's first edition which appeared in 1911, and offered treatment as follows:

1. Old time traction and counter-traction by weight and pulley, and elevation of the foot of the bed.
2. The Thomas Hip Splint, with, or without traction.
3. Method of forcible abduction and immobilization by plaster of Paris, with or without continuous traction.
4. Method of pegging.

The author was evidently being greatly influenced by the Whitman method because he gives considerable space to it, and it is interesting to

note that in the fourth method described, which is the method of pegging, a nail was used. He was a rather optimistic individual because he states, quoting, "In fresh fractures in old people and young adults a peg may be placed without a skin incision directly through the trochanter and neck into the head."

The next text examined was that of Preston which appeared in 1915. Preston was Surgical Examiner for the Colorado State Board of Examiners, and former Police Surgeon for the City of Denver. Here the influence of Whitman is quite manifest, also some of the older methods, such as the T-splint; also Buck's extension with the T-splint was advocated, but the most interesting thing about the whole book is that the operative treatment was a criticism of nailing and pegging. He devised a method of internal fixation which consisted of a screw and a long arm which was applied with other screws to the lateral surface of the femur.

The next text examined was that of Roberts and Kelly, 1922. The first edition appeared in 1916; my copy is that of the second edition, which appeared in 1922. Descriptions of the older methods, such as Buck's extension and T-splint, are mentioned, but we can see very definitely the influence of Whitman. They speak of the Ruth Maxwell method also.

The next text examined was by Hey Groves, an English author, which disclosed quite modern methods of treating fractures. The text is unsatisfactory because it is purely operative. He, however, advises a bone graft after the method of Albee.

We now come to Speed, second edition, 1928, and without a doubt Speed, in his usual clear and concise manner, probably gives the most exhaustive expose of any of the texts examined. He discusses the various operative methods and shows bad results of nailing by penetration of the acetabulum, and faulty union.

Magnuson was the next text examined, and which appeared in 1933. He is definitely in favor of the Whitman method for fresh fractures.

Cochrane and Wilson was the next text, first edition, 1925. Their text, like Speed, is very extensive in respect to the fractures of the neck of the femur. They are very strong for the Whitman method. On page 508 are shown two radiographs of open reduction of the femoral neck fracture in a young adult. There is fixation with a steel nail; also this statement, "The introduction of foreign material for the purpose of internal fixation is rarely required since the introduction of the Whitman method."

Of the most recent texts two will be mentioned. In Key and Conwell's edition of 1934, Whitman is the dominating influence. Mention is made of the Smith-Petersen nail.

Then came a text by Philip D. Wilson and collaborators, entitled "Management of Fractures and Dislocations", in which there is a very extensive review of the treatment of intracapsular fractures



of the neck of the femur by nailing, with a critical analysis of case histories. There was also a chapter devoted exclusively to the Smith-Petersen nail by Smith-Petersen and oc-workers.

The next text examined is the Eleventh Edition of Scudder, which appeared in 1939. His discussion of the problem is very complete. He describes many methods, and in very marked detail the Whitman method, showing that Whitman does still influence Scudder's thoughts. There is also a considerable discussion of the various methods of skeletal fixation, particularly the Moore wires. In all, Scudder's text is very refreshing and satisfying.

#### COMMENT

In conclusion, I have attempted to show the number of years through which the influence of Coop-

er's writings held sway. This influence began to lessen after the publication of Whitman's abduction method appeared. There is no doubt that Whitman may well be a landmark in fracture surgery, because of his contribution, although his method was not always received by various writers with enthusiasm. His star is now in eclipse, so that we have now arrived at a period, the "hardware" stage, as one observer so aptly described it, since metal fixation has gained very enthusiastic favor. Today wires, flange nails, X-type nails and toggle bolts are being used by various surgeons. While the methods of nailing are not altogether new, the test of time will ultimately prove their value.

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## Helminthic Infections\*

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THE term "helminthiasis" usually deals with infestations caused by parasites representing the two phyla—platyhelminthes, the flatworms, and nemathelminthes, the roundworms. More rarely the terms deals with another group, the phylum, annelida, certain representatives of which may parasitize man.

Parasites of the two phyla, platyhelminthes and nemathelminthes, are peculiar in that they have a definite adaptation to the tissues of their hosts and are thus able to survive and reproduce their kind. Although the greater majority of the parasitic worms are found in the lumen of the intestine or attached to or embedded in the intestinal wall, many other parts of the body are invaded, including the trachea, lungs, liver, spleen, heart, bladder, sinuses, muscles, peritoneum, eye, brain and subcutaneous tissues.

Each species of parasitic worm must have some way in which to enter the body of its host, and, in addition, must have some way by which its offspring may escape. The majority of the intestinal parasites enter the body of their host through the mouth, and the eggs or larvae escape with the passage of the feces. Many of the helminths utilize an intermediate host such as certain species of snails, blood-sucking insects and other invertebrates to assure their existence as well as their transfer from host to host. Other species depend upon the accidental ingestion of their eggs by means of contaminated food and water. Still other species effect their entry by burrowing through the skin and ultimately reach their destination within the host's body. During the period of migration after entering the body of the host, certain species become "sidetracked" during their development and thus

must wait until the host is devoured by some other animal before the life cycle can be completed.

Infections, showing clinical symptoms, are dependent upon several factors such as: (1) the organs or tissues of the body invaded; (2) the degree of infection, *i. e.*, the number and size of the parasite involved; (3) the ability of the parasite to stimulate the replacement of host-tissue by tissues of abnormal types; (4) the ability of the parasite to produce either mechanical or toxic injury, and (5) the susceptibility or the resistance of individuals or races to the infection. Faust<sup>3</sup> states that "there is a wide range of compatibility between the parasite and its host. In certain individuals there is complete lack of reaction on the part of the host; acute infection results and the prognosis is grave. In other patients there is mild reaction and the infection becomes chronic. A third consists of sufficiently controlled reaction on the part of the host to replace tissue as rapidly as it is destroyed, with little or no symptoms resulting; this is referred to as a 'carrier state.' In a fourth type of relationship the parasite, due to a high threshold of resistance (non-susceptibility, immunity) on the part of the host, is unable to establish itself. On the whole, children are much more susceptible to worm infections than are adults."

#### PLATYHELMINTHES

The phylum platyhelminthes is divided into four classes, namely: (1) turbellaria, (2) trematoda, (3) cestoda, and (4) nemertea. Of these four classes only the trematoda and cestoda are parasitic in man, the other two classes being comprised mostly of free-living, non-parasitic forms with the exception of the turbellaria, which class includes a few species living as commensals or as parasites in animals other than man.

Among the tremoda, which includes the intestinal, liver, lung and blood flukes, we have no particular concern although we do have to be on

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the lookout for infections of the blood fluke, *Schistosoma mansoni*, as this species has a wonderful opportunity for introduction into the southwest, particularly along the coastal areas. In those areas there is a distribution of molluscan hosts suitable for the development of the immature stages of this parasite. The climatic conditions in the area bordering the Gulf of Mexico and extending down into Mexico are essentially correct. The distribution of the parasite extends well up the eastern coast of South America and involves several of the smaller islands. The other flukes offer no immediate problem, although they should be kept in mind as possible human invaders.

In infections due to members of the class cestoda, the symptomatology, according to many workers, is psychological—that these parasites within the intestinal tract are relatively harmless—that few tapeworms produce symptoms except for nervous irritation, particularly in children. Chandler<sup>2</sup> states that: "They may cause mechanical injury by obstructing the intestinal canal and by injuring the mucous membrane where they adhere, and they may absorb enough nourishment to produce the proverbially ravenous 'tapeworm appetite.' They undoubtedly do some injury by producing toxic substances that are absorbed and which cause symptoms as anemia, eosinophilia, malaise, and indefinite nervous symptoms such as dizziness, insomnia, restlessness, false sensations and occasionally convulsions and epileptic fits. Disordered appetite, abdominal discomfort, anal itching, etc., may be complained of."

Of the tapeworms we have *taenia solium*, the pork tapeworm, which can at once be ruled out as an important parasite in this country, although it is common in parts of the world where pork, not thoroughly cooked, is consumed. Instead, its close relative, *taenia saginata*, the beef tapeworm, is most often confronted. *Cysticercus cellulosae*, the larval stage of *taenia solium*, commonly known as the "bladder worm," may produce severe infections in man, particularly so if these larval forms become lodged in the tissues of the brain.

*Hymenolepis nana*, the dwarf tapeworm, occurs usually in small children and is the most frequently encountered tapeworm in the southern United States. This parasite requires no intermediate host and is able to complete its developmental cycle within the human host. A close relative, *hymenolepis diminuta*, the rat tapeworm, has been reported in increasing numbers for man and has been found in several of the southern and southwestern states. These two species of worms may produce at times various clinical symptoms as systemic toxemia, cachexia, insomnia, convulsions and epilepsy. Man becomes infected by swallowing the eggs picked up from soiled toilet seats, dirty bed linen or directly from anus to mouth in the case of *hymenolepis nana*, while several species of insects serve as intermediate hosts of *hymenolepis diminuta* and man becomes infected by the accidental swallowing of these infected arthropods.

Another tapeworm often found in the cooler portions of the world is the broad tapeworm of fish, *diphyllobothrium latum*. This parasite has several foci in North America and has been reported from Canada and from around the shores of Lake Michigan and from the lake regions of Minnesota. According to the recent literature, this worm appears to be a parasite of some importance in the United States. The life cycle of this worm requires two intermediate hosts in order to further its development before reaching the final host. These intermediate hosts include any one of several appropriate copepods and fresh water fish of several species. Dog, cat, pig, fox, mink, seal, walrus and man are susceptible to infection with this parasite, but man is the chief disseminator of the eggs of this cestode in endemic areas.

Infection with the larval forms of *echinococcus granulosus*, the hydatid worm, a very small worm in the adult stage inhabiting the intestinal tract of dogs and other animals, should always be regarded as serious, although the seriousness depends upon several factors such as the type of cyst produced, the organ or tissue invaded and whether or not secondary cysts develop. Human infection is acquired by the accidental ingestion of the eggs of the parasite through contaminated food, particularly vegetables, or from direct transfer by the fingers to the mouth from handling or fondling infected dogs.

*Dipylidium canium*, the double-pored tapeworm of the dog, is another helminth parasite found more particularly in children. The developmental cycle of this worm requires an intermediate host, which in this case is either the biting louse of the dog, *trichodectes canis*, or the dog flea, *ctenoccephalides canis*. Children become infected by the accidental ingestion of an infected louse or flea, or by allowing their faces to be licked by a dog which has just crushed a louse or a flea with its teeth.

#### NEMATHELMINTHES

The phylum nemathelminthes is divided into two classes, the nematoda and acanthocephala. The majority of the forms pathogenic in man are found in the class nematoda; only two species of the acanthocephala are known to occur in man, and these but rarely.

According to Lamson,<sup>7</sup> the round worms inhabiting the intestine may be characteristically grouped as follows:

1. Those not embedded in the intestinal mucosa—free living. *Ascaris lumbricoides* and *enterobius vermicularis*.
  2. Those partially embedded in the intestinal mucosa. *Trichinella spiralis* and *trichocephalus trichiuris*.
  3. Those completely embedded in the intestinal mucosa. *Strongyloides stercoralis* is the only one coming under this grouping.
- Hookworms, *necator americanus*, *ancylostoma duodenale* and *ancylostoma braziliense* will attach and reattach at intervals.



*Ascaris lumbricoides*, the large round-worm of the intestine has a world-wide distribution and is particularly prevalent in the warmer climates. It is chiefly a parasite of children, who acquire the infection through the accidental swallowing of infective eggs obtained from polluted water, contaminated food, soil from dirty floors of dwellings and outhouses and from soil in yards in shady places where the eggs are protected from the direct rays of the sun. In the migration of the larvae severe symptoms may develop particularly so when these forms invade the lungs.

*Enterobius vermicularis*, the pin- or seat-worm, is primarily an infection of children, although it is often found in all members of the household. The movements of the adult worms on the perianal skin causes an intense pruritis, particularly at night, and often results in a determined effort on the part of the patient to relieve the discomfort by scratching with the finger nails, and in so doing many infective eggs are picked up which may eventually reach the mouth and subsequently swallowed. Infective eggs may also be picked up from soiled bed linen or night clothes by other persons handling these materials used by the infected patient.

Infections with *trichinella spiralis* are prevalent in many sections of the United States, positive cases ranging from 3.5% in New Orleans to 27.6% in Boston. In 1936 McNaught and Anderson,<sup>8</sup> in their report on the incidence of trichinosis in San Francisco, found that 24% of 200 autopsied cases examined were positive. Geiger,<sup>1</sup> based on case reports for the years 1936 and 1937, shows that 27 cases occurred in San Francisco during these two years. Man becomes infected by eating improperly cooked pork or bear meat containing the encysted larval forms. Records show that these encysted forms may remain viable after an elapsed period of 11 years in hogs and from 25 to 31 years after infection in man. The fatality of this disease has been as high as 30% in some areas, but it is dependent to a great extent upon the number of larvae originally ingested, since a small number of worms do not produce a serious or even a noticeable effect.

*Trichocephalus trichiuris*, the whipworm, infections are rarely important clinically except in heavily infected cases. The symptoms produced in the event large numbers of the worms are present simulate those found in hookworm infections, and patients so infected will soon succumb unless the parasites are destroyed. Man becomes infected through the accidental swallowing of fully developed eggs obtained from polluted water or moist soil from infected dooryards. This is a cosmopolitan parasite, more common in the warm, moist countries of the world. In the United States the distribution is quite scattered, being found more particularly in areas with a heavy rainfall and soil adapted to hold the moisture.

*Strongyloides stercoralis*, with a distribution approximating that of hookworms, is considered to be more and more important as reports from increasing amounts of investigation appear. According to Craig and Faust,<sup>1</sup> Darling (1911) and Faust (1936) reported infection rates as high as 20% of surveyed populations. Man becomes infected through skin contact with the infective stage larvae which have developed in the soil. At the site of entry a petechial hemorrhagic area appears with intense itching. Other symptoms are noted as the larvae migrate into the blood vessels and then to the lungs, where they may cause inflammation similar to that produced by the larvae of *Ascaris lumbricoides*. The usual foci of infection of the adults are the upper levels of the intestinal tract. The adult female worms produce embryonated eggs in the mucous membranes of the intestine. The larvae hatching from these eggs make their way into the lumen of the intestine and as such are found in freshly passed feces. This peculiarity forms the basis for diagnosis, as any living larvae found in freshly passed feces will usually be the larvae of *strongyloides stercoralis*. In stools which have stood for some time in a warm room, *strongyloides* larvae would necessarily have to be differentiated from newly hatched hookworm larvae. This fact shows the necessity for the examinations of freshly passed stools in cases of strongyloidosis.

Hookworm infections are caused by members of the genus *necator* and of the genus *ancylostoma*. *Necator americanus* is the common hookworm of the western hemisphere; *ancylostoma duodenale* is practically limited to the temperate zones of the Old World, while *ancylostoma braziliense* has a scattered distribution in warm, humid climate, including the northern part of South America and along the southeast Atlantic and Gulf states. In case of exposure to the infective stage larvae found in "night soil" and infested soil, the larvae penetrate into the deeper layers of the skin. Some of these larvae penetrate into the peripheral blood vessels, and are carried to the right heart and then to the lungs, thence through the alveoli, up the air passages to the glottis and then down through the oesophagus to the small intestine and become attached to villi and develop to maturity. Larvae of other species of hookworms, particularly those producing infections in dogs and other animals, often invade man, and, seemingly unable to penetrate into the peripheral blood vessels, continue to migrate through serpentine tunnels within the skin layers, producing the so-called "creeping eruption." Reed<sup>10</sup> states that: "This is in accord with the general law of parasitology that unaccustomed parasites tend to invade unusual parts of the host's body."

Filariasis caused by a nematode parasite, *wuchereria bancrofti*, is found in practically all the warm regions of the world. In the United States the infection seems to be confined to the area around

Charleston, S. Car., and is often spoken of as the "slave disease." The life cycle of this parasite depends upon certain species of mosquitoes for its transfer from host to host. In the United States, *Culex quinquefasciatus* is the principal vector, although *Culex pipiens*, a mosquito resembling *Culex quinquefasciatus*, should be regarded with suspicion. This species (*C. pipiens*) has a wide distribution in this country and is a proven vector of the disease organisms in other parts of the world. Many other species of mosquitoes have been demonstrated to be important carriers, but any mosquito in which the larvae develop should be considered as a potential vector. Three other species of filarial worms, *Loa loa*, *Acanthocheiloneuma perstans* and *Onchocerca volvulus*, have been incriminated as causative agent of disease. All of these species of worms are important and all depend on an insect or some other arthropod as an intermediary host. Of these three filarial parasites, *Onchocerca volvulus*, the causative agent of the disease entity, onchocerciasis or onchocercosis, deserves mention. This disease, originally a human disease of Africa, has gained entrance into South and Central America through the slave trade and is gradually spreading northward. This nematode parasite is dependent upon species of flies belonging to the family *Simuliidae* of the order *Diptera*, for their distribution. These insects are small, black flies which are vicious biters and inhabit shaded areas along shallow mountain streams, but may also breed in ditches along the roadside in which water moves more slowly. The members of this family are quite widely distributed in the United States, 47 species have been described under the one genus, *Simulium*, although some workers have placed many of them under several subgenera. In California 18 species have been reported, while 12 species have been reported from the southwestern group of states. The insects representing the family *Simuliidae* are notoriously difficult to control, due to the habitat in which the immature stages are found. The adult females deposit their eggs on rocks, logs, dipping leaves, twigs and grasses, and in the spring of the year the peculiarly shaped larvae can be found in masses clinging to these objects beneath the water, particularly in places where the stream of water forms miniature "falls." Herms<sup>3</sup> "has repeatedly recommended that streams in which these insects are breeding should be kept as free from debris as possible, including dipping branches of overhanging trees and submerged roots."

The most characteristic feature of this disease is the formation of nodules in the subcutaneous tissues surrounding the worms. These nodules are usually found where pressure on the skin occurs, due to tightly fitting hats or clothing, or at areas where the skin is more tightly drawn, such as at bone articulations and around the ears and eyes. The most serious condition is blindness caused by the larvae penetrating the tissues of the eye. This

condition is prevalent in Guatemala and Mexico, and is a major cause of blindness in those countries."

#### DIAGNOSIS OF HELMINTH INFECTIONS

The diagnosis of helminth infections depends chiefly upon the microscopic identifications of the eggs, larvae or adults as they occur in the tissues, feces or body excretions. In addition, clinical symptoms must be taken into consideration as well as positive skin reactions produced by specific antigenic materials in certain of the infections.

In instances where light infections are indicated, centrifugation or floatation of fecal specimens by any one of several methods may be necessary when dealing with forms which at some time during their life cycle inhabit the intestinal tract.

#### LABORATORY EXAMINATIONS

A brief account of the laboratory means of diagnosis of the more important helminthic infections follows:

##### *Platyhelminthes*

##### *Cestoda*:

*Taenia solium*—Identification of mature proglottids in fecal stool. May be distinguished by the presence of 7-13 lateral arms of the uterus. Scolex which is armed with two rows of large and small hooklets is also diagnostic.

*Taenia saginata*—Identification of mature proglottids in fecal stool. May be distinguished by the 15-20 lateral arms of the uterus. Scolex which is unarmed, is quadrate in appearance with four hemispherical suckers.

*Hymenolepis nana*—Identification of eggs in stool. Eggs are spherical, hyaline, with polar filaments between the inner and the outer shells.

*Diphyllobothrium latum*—Identification of the eggs in the feces. Eggs are approximately 45x70 microns, yellow in color, broadly oval, operculate. Proglottids are broader than long, the uterus forming a "rosette" in the center of each proglottid.

*Echinococcus granulosus*—Eosinophilia of 30-35% is suggestive.

##### Hydatid thrill.

Presipitin test: Equal parts of patient's serum and hydatid fluid. Incubate at 37 degrees C. for one hour. Flocculation appears within 36 hours.

Casoni reaction: Antigen of sheep or hog (fluid obtained by the aspiration of cyst found in liver of either of these animals). 0.2 cc. antigen injected intradermally in the skin of the arm of the patient. Control with saline. Wheal forms in about 15 minutes if case is positive.

##### Complement fixation test.

*Dipylidium caninum*—Diagnosis usually based on the discovery of a single proglottid or a small chain of proglottids having a characteristic "pumpkin or cucumber seed" shape, with a genital pore on either side.

##### *Nemathelminthes*

##### *Nematoda*:

*Ascaris lumbricoides*—Diagnosis usually based



upon the recovery of the very characteristic fertilized or unfertilized ova in the stool. These ova are rather large, broadly oval, and covered with a coarsely fluted or mammillated outer shell. Due to the staining with bile pigment they usually appear a golden-brown color. In case infections are caused by male worms alone, the diagnosis must be based on clinical symptoms or history of previous infections or by the discovery of the male worms in the feces.

*Enterobius vermicularis*—Scrapings from under the finger nails or from the skin of the perianal region will usually reveal the eggs of this species in the infected patient. Eggs are seldom found in the stool. Eggs are rather small, elongate, ovoid and flattened on one side. By emulsifying a portion of the stool in saline and placing this emulsion in a shallow, white soup plate, the living adult worms can easily be seen floating around on the surface film. Examination of the stool following an enema reveals the adult worms.

*Trichinella spiralis*—The history of the case is important. Symptoms of nausea, vomiting, diarrhea, fever, colic and sweating in the early stages (7-14 days).

High eosinophilia is suggestive.

Biopsy of muscles: usually the deltoid or biceps muscle, and examined for the presence of larvae.

Recovery of adult worms or larval forms in the feces during the diarrheic stage.

Recovery of the larvae in the blood, spinal fluid or in the mother's milk during the period of larval migration. This usually occurs on the sixth day after infection. Accomplished by placing 5-10 cc. of venous blood in 20 cc. of 2% acetic acid; centrifuge and examine microscopically.

Intradermal test of Bachman.

Antigen—Treated larvae.

Test—Dilution 1:10,000. One-tenth cc. injected intradermally into the skin of the arm. If negative, use a dilution of 1:500. Positive reaction occurs in from 5 to 10 minutes. It is best to conduct a precipitin test as a check, as with the low dilution persons infected with *trichocephalus trichiuris* also show positive reactions.

At autopsy, 40 or 50 grams of muscle from diaphragm digested in the medium of 0.5% hydrochloric acid and 0.7% pepsin for about 5 hours at 37 degrees C. (McCoy<sup>9</sup>) is useful in determining the extent of the infection in fatal cases.

*Trichocephalus trichiuris*—Recovery of the characteristic barrel- or lemon-shaped eggs in the feces. The eggs are rather small, yellowish in color, and have a double shell with bipolar plugs.

*Strongyloides stercoralis*—Based on the presence of living larvae in freshly passed stools or the presence of filariform larvae in sputum.

Hookworms, *ancylostoms duodenals*, *ancylostoma braziliense* and *necator americanus*—Recovery of the characteristic eggs in the stool. These eggs are

similar in appearance but typically possess thin shells, are hyaline in appearance and oval in shape with broadly rounded ends. When discharged by the adult female worm they are usually in the 2-8 cell stage of division.

If the stool has been allowed to stand for a day or two, the eggs may have hatched and the resulting larvae must be distinguished from the larvae of *strongyloides stercoralis*. The hookworm larvae, at this stage of development, possess a long pre-oesophageal buccal channel which will immediately differentiate these larvae.

*Wuchereria bancrofti*—Fresh cover slip preparations of blood removed from the vein each 2 hours for 24 hours and examined microscopically for living larvae. Preparation of a thick and thin film and stained with Mayer's haem-alum stain is desirable. Giemsa's or Wright's stain is also valuable and gives equally good results.

*Onchocerca volvulus*—In tumour, sterilize the skin, puncture nodule with a syringe and aspirate the fluid. Examine microscopically for living larvae.

No tumour, shave off a piece of skin about 5 mm. in diameter and place in a drop of water on a clean glass slide. The tissue can then be teased apart with needles and any larvae present can readily be detected under the microscope.

#### COMMENT

"The physician, particularly the pediatrician," states Faust,<sup>3</sup> should have an intelligent conception of the size, number and position of the worms involved, as well as their accepted methods of diagnosing the infection and the relationship to the syndromes present. He should understand the relative specificity of various therapeutics and their tolerated doses. Finally, he should have sufficient knowledge of the propagation of these worms within and outside the human body in order that he may the more readily institute measures to prevent reinfections and to remove the danger from others in the community."

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# Infectious Mononucleosis with Jaundice

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**A**LTHOUGH infectious mononucleosis is rather common and has filled a considerable space in the literature of the last ten years, this series of cases is presented as offering a striking and apparently a rather unusual symptom or complication. The occurrence of so many instances of jaundice in a group of young adults and children is distinctly unusual in private practice. It was still more striking that many of them occurred within the space of two or three months. This was not a solitary observation, for several of our colleagues in the same town and adjoining areas reported that they had seen many cases of jaundice in children.

## CASE REPORTS

*Case 1.* Nov. 28, 1934. J. C., physician, aged 26, with temporarily quiescent pulmonary tuberculosis. About a week prior he had had a period of prolonged exertion, with loss of sleep and exposure, following which and until that date had noticed transient feelings of nausea. On November 27 he noticed enlargement and tenderness of the lymph nodes in the right posterior cervical triangle. On the following day there was also adenopathy of the group on the other side and of the right axillary nodes. At the same time nausea became quite marked and was associated with dizziness, sore and painful eye-balls, and soreness and stiffness of the neck. There was also at this time marked pain in the left maxillary sinus. Dr. Thomas Slayden transilluminated the sinuses and found the left opaque. A nasal pack was placed in position and after removal gave some relief. Lymphatic enlargement progressed rather rapidly and eventually involved the cervical, occipital, submaxillary, submental, axillary and inguinal glands. The epitrochlears were spared, however. Itchiness of the skin was noticed on November 29, but frank jaundice did not appear until December 2. At this time gastric distress was marked with pain of a boring and burning character in the midepigastrium, which was relieved by alkalis, bismuth and a low fat diet. (The patient had not had any ulcer-like symptoms before.) The liver and spleen were not enlarged, though there was subcostal pain on the right and marked tenderness to pressure in this area and in the midepigastrium. At no time was the temperature found elevated; the pulse remained slow. No cough or sore throat developed. The urine was highly colored and the stools a golden or lighter yellow. Blood Wassermann on December 6 was negative as was the Kahn. Strength and well-being returned in two or three more days, but lymphatic regression was still incomplete on January 1, 1935. Tuberculous adenitis was first considered, but quickly was excluded on account of the generalization of adenopathy. Lues was considered on account of a recent finger wound during an operation. Acute catarrhal jaundice was considered as most probable until the blood count was obtained, and its possibility was further discredited by the generalized adenopathy and the rapid clearing of jaundice. On the basis of blood count, lymphatic leukemia was considered, but the benign course at the time and the jaundice were against such a diagnosis. The lymphatic enlargement, which

reached the size of a pecan in some nodes, and the jaundice led to consideration of Hodgkin's disease, but the blood count excluded that possibility. Successive blood counts are appended:

Date	RBC	HB	WBC	P	L	B	E
12-3-34 ....	5,100,000	82	14,000	18	82		
12-12-34 ..				25	71		44
12-20-34 ..				55	39	1	5
1-7-35 .....			5,650	63	31		6

*Case 2.* D. H., farmer, age about 25, 11-14-35. The only significant past history was of an attack of severe typhoid about three years before. He complained of pain and burning in the stomach. He had had severe vomiting, itching of the skin, dizziness and general malaise. He didn't think he had had any fever. The sclerae were definitely icteric, the skin less tinted but still plainly jaundiced; in addition, the skin showed a rather generalized bright red pin-point rash, somewhat resembling that of scarlatina. Temperature at that visit at the office was 98. The physical examination was entirely negative otherwise except for tenderness on pressure in the midepigastrium and along the right costal margin. There was moderate enlargement of the cervical nodes, but no complaint of sore throat and no visible evidence of pharyngitis. The blood count was WBC 7-150, polys 57, lymphocytes 42, eosinophiles 42. Though this count was not striking, the lymphocytes of the smear were definitely abnormal, with plainly lobulated and vacuolated nuclei that took a deep basic stain. One nucleus assumed a dum-bell shape with heavy staining at the ends as if it were a mitotic figure.

*Case 3.* R. S., a school-boy, about 13 years old, living on a farm and attending a rural school. Had been ill a week when he came in on November 30, 1935. At that time he showed jaundice, pain on pressure in the midepigastrium, enlargement of the cervical and inguinal nodes. WBC 8,950, polys 24, lymphocytes 65, eosinophiles 1. On study of the individual cells, many appeared to be lobulated and a few showed a curious bud-like protuberance of cytoplasm. Subsequently, a case that resembled his in every particular occurred in a sister younger than he. His parents treated her at home without medical service.

*Case 4.* T. H., male, aged about 3, November 30, 1935. Came in with a history of being ill and feeling badly for several days. There was jaundice of the sclerae with subicteric tinting of the skin. The cervical nodes were very much enlarged, as were the inguinals. WBC 13,050, P 66, L 32, E 2.

*Case 5.* February 20, 1936, C. B. R., male, aged 11, schoolboy. Had been ill some days complaining of pain in the inguinal region. There had also been vomiting, dizziness, malaise, and light stools. Jaundice was definite and there was a considerable enlargement of the inguinal nodes on both sides. Cervical adenopathy was slight. His mother commented that she kept thinking he was catching cold, but that she didn't become alarmed until symptoms of a cold failed to develop. Urine contained albumin 1 plus, bile pigments, and hyaline casts. WBC 12,000, polys 46, E 4, lymphocytes 50. Another count just five weeks later showed the following results: RBC 5,390,000, HB 86%, WBC 5,600, polys 33, lymphocytes 61, and eosinophiles 6.

*Case 6.* October 26, 1935. E. W., female, age 14, schoolgirl. Became ill about a week ago with some

\* Deceased.



fever. There was no chill, rash or diarrhea. Stools gradually changed to a golden yellow, while the urine grew dark. The inguinals and epitrochlears were enlarged moderately; the liver was about an inch below the right costal margin and quite tender; there was slight but obvious icterus of skin and sclerae. WBC 7,800, polys 43, lymphocytes 53, eosinophiles 2, plasma cells 2. Subsequently, a sister just younger than she had what her parents thought was the same disease, with glandular enlargement and jaundice, but she was not brought in.

*Case 7.* V. J., schoolboy, aged about 10, became sick on December 26, 1935, with sore throat (his complaint; there was no evidence of infection when he was seen), vomiting, high fever, pain in the right upper quadrant, and general malaise. No jaundice was present at this time. Eight days later he was seen with enlarged cervical and inguinal nodes and definite icterus. He complained of vertigo, and pain and tenderness in the midepigastrium and along the right costal margin. Urine was negative except for a strong reaction for bile pigment. WBC 9,250, polys 46, lymphocytes 54.

#### COMMENT

During this same general period we also had four other cases of jaundice in children, but were unable to secure blood counts on them, and one case that preceded case 1 was frankly missed.

In comparison with other series of cases to which we have had access, these are distinguished by the presence of jaundice. A rash was noted only once, though it is reported as common in some series. Only one made any complaint of sore throat and none showed injection of fauces or tonsils or soft palate. One case apparently had a related sinusitis. In the group were two young adults, while the remainder were all below adolescent age. Plasma cells were noted in one case on the first examination, and subsequently a single plasma cell was found in another on re-checking the smears. These cells when present are considered rather characteristic of the disease.<sup>5, 14</sup> All cases showed the peculiar, large, dark-staining and lobulated lymphocytic cells which have been frequently described,<sup>1, 8, 13</sup> and which have sometimes been mistaken for lymphoblasts.

The series is remarkable for the fact that two cases seem to have developed in each of two families an infrequent finding. Like many other series, this one shows a rather wide variation in the number of white cells as well as in the differential.<sup>9</sup> No doubt a partial explanation of this is the period at which the patients were seen. A transitory false positive Wassermann reaction has been noted occasionally,<sup>7</sup> but in the only case on which we secured such a test it was negative. Fever was not a noticeable symptom, only two of our series having had enough to call for comment. The complication of hemorrhagic nephritis<sup>1</sup> or meaturia<sup>6</sup> was not present in any case, though one boy showed a trace of albumin and a few hyaline casts.

As in the case of other series,<sup>9</sup> it was impossible to trace contagion in these cases. They were about equally divided between two and country. Those in town lived in widely separated areas and did not attend the same schools, while those in the rural sections were remarkably scattered to the

extremes of a 20- or 30-mile radius. One case in whom the diagnosis was made clinically, but upon whom we could not secure a count, came from a town 150 miles distant. The only apparent cases of direct and evident contagion were the two instances of two cases in the same family, which is not usual.<sup>6</sup>

The jaundice, of course, is the outstanding complication or symptom in this series. Though an occasional case has been reported the largest series we have encountered is that of McKinlay,<sup>11</sup> who found five cases, or 16%, in his series. The fact that we are unable to give any cases without jaundice is not an indication that there were no such cases. Very probably there were many, but due to the economic status of the region such children were treated at home and were not seen at all by physicians. This would be particularly true of the rural communities, where sore throats and slight pyrexias are regarded as pretty much a natural and inevitable symptom of winter.

The question of the cause of the jaundice arises. Apparently it was of an obstructive type, since the few patients on whom we secured red counts showed no evidence of any severe degree of hemolysis. That the obstruction was not complete is shown by the fact that none of the patients admitted to clay-colored stools. It is possible to consider a temporary partial obstruction, perhaps due to some enlarged node in the neighborhood of the common bile duct. It is equally permissible to think of the jaundice as a result of systemic toxin, with perhaps an acute cloudy swelling of the liver. That it was not of allergic origin is pretty well indicated by the fact that during the height of the pigmentation eosinophiles were few or absent, while they returned in greater numbers during the period of recovery, a finding which has been noted before.<sup>1</sup>

The jaundice naturally changed the differential to some extent, since it was necessary to rule out acute catarrhal jaundice as mentioned in the discussion of case 1. In case 2, particularly, with his history of typhoid, it was also necessary to rule out gall-bladder disease. The lack of previous history of such attacks, the absence of colic or cramping, the low blood count were against such a diagnosis, while in favor of infectious mononucleosis was the mildness of the attack, the adenopathy, the ready recovery, and the presence of characteristic cells. Weil's disease might be considered a possibility, but it is not common in this country, the course is very much more severe as a rule, it is not accompanied by the changes noted in the white blood cells or by adenopathy. The recovery of the specific organism is possible in many cases. Lymphatic leukemia is commonly given as one of the differential diagnoses, but it is rarely if ever associated with jaundice. The blood count is more distinctive and the course is steadily downward to termination, while all of these patients are alive and

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## WM. B. CANTRELL, M. D.

At the recent annual session of the New Mexico Medical Society in Albuquerque, May 27-29, 1940, Dr. William B. Cantrell was elevated to the presidency, succeeding Dr. George T. Colvard of Deming.

William Brackett Cantrell was born December 15, 1880, on a farm near Smithville, Tenn. His elementary education was obtained in country schools and he was graduated from Smith High School in 1901. In 1907 he was graduated from the University of Nashville, Medical Department, and practiced medicine at Cassville, White County, Tenn., until 1914. He then entered the senior class at the University of Tennessee, Memphis, and graduated in 1915. This same year he came to Gallup, New Mexico.

Dr. Cantrell holds license by examination from New Mexico, Tennessee and Arkansas, although he never practiced in the latter state.

At the beginning of the World War, he entered the U. S. Army and served for 2 years and 2 months. He entered the service as a first lieutenant and came out a major in the Reserve Corps. He has kept up his reserve commission, has had many periods of active training service, was commissioned a lieutenant colonel in 1924 and has been commissioned three times since.

He returned from the army the latter part of 1919 and re-entered the practice of medicine and surgery in Gallup, where he has been active since. He has been president of his local county society twice—once in 1923 and once in 1935.

Dr. Cantrell has taken a great interest in the New Mexico Medical Association and served as vice-president from 1938 to 1939. Also, he has been on the Board of Managers of SOUTHWESTERN MEDICINE since 1937, and was quite helpful at a time when the Rocky Mountain association was about to take New Mexico with them. But it was through him and some others that New Mexico retained primary allegiance to the Southwestern Medical Association.

Dr. Cantrell has been a loyal citizen of his town, county, state and the Southwest. He has been active in Kiwanis Club in Gallup for 20 years and has



served as its president. He has been local commander twice, district commander twice, and department vice-commander twice.

He is now chief of staff in St. Mary's Hospital in Gallup. Professional memberships are: American Medical Association, New Mexico Medical Society, McKinley County Medical Society, Southwestern Medical Association.

## ARIZONA INFANT MORTALITY

In Arizona in 1939, 98.8 babies out of each 1,000 born alive died before they reached the age of 1 year—a total of 1 075 infant deaths!

Many of the causes from which these infants died were preventable. Diarrhea and enteritis, the first of these causes of death, could have been prevented, to a great extent, by improved sanitation and rehabilitation. Pneumonia, the second cause of death, may have been prevented by rehabilitation and prevention of exposure. Syphilis, again one of the principal causes of infant mortality, could have been prevented by proper prenatal care for all



mothers, including a blood test for the diseases. Whooping cough, also a principal cause of death, could have been prevented by the simple procedure of immunization and good infant care.

There is no logical excuse for the death of babies from the causes that have been mentioned and from many other causes which take their deadly toll each year. Here, again, lies a problem for each community and the organizations within that community. Here, again, lies the chance to promote education, medical and health organization, and wise and adequate legislation.

Today, through the services of clinics and the efforts of cooperating physicians and through the services and efforts of public health nurses, much has been accomplished in maternal and child health work in Arizona by the health department and associated agencies. However, there is much more to be done in order to make the state a healthier place in which to live—a place in which the lives of infants and children are secure and protected in the light of health.—*Fred P. Perkins, M. D.*

### CHOOSING A DOCTOR

Physicians are frequently asked by patients and friends as to how they should choose a doctor to serve them and their families. Most people have some notion of what they want in an automobile, the average person has rather definite criteria by which to judge and choose a new electric refrigerator. But, too often, when a doctor's services are needed, a hit or miss grab is made. And out of the confusion of bell-hop's recommendations, the impression some new doctor made at lodge meeting, the size of the car he drives, the plug of the corner druggist—a choice is accomplished. The random selection may or may not be suitable. It may prove to be a very unhappy one! The point is that few people are aware that a method of selection of a physician does exist—a method as nearly right and sensible as any man-created system can be. Certain qualifications of the physician are highly pertinent in any relationship between him and his patient. Let the patient judge his prospective attendant in the light of (1) integrity, (2) standing in his profession, (3) branch of medicine practiced, (4) skill and experience, and (5) personality. As the president of the Medical Society of New York said recently: "If more people were informed on this subject, doctors would be better doctors, and patients would be better patients," and it can be added that fewer instances of dissatisfaction and disappointment would occur on the part of the patient or the doctor.

The American Medical Association has long performed the preliminary task of casting the quacks and the frauds and the cults into one well-labeled stockade, where the public may read the warning signs. This has been done in the main by the setting up of highly stringent qualifying standards of education and conduct which must be met before membership in the association will be granted. The records thus amassed are open to the public. The

interested person can readily ascertain the professional status of any physician by consulting the directory of the American Medical Association, or a request to the secretary of the local medical society will afford the same information. If a physician be listed as a member of the American Medical Association it is certain that he has met high demands, that he has spent long years acquiring his scientific education.

There are not many dishonest men practicing medicine today. The principal wonder is that there are not more, for the credulity of the average person in matters concerning his body, its functioning and behavior is simply astounding. The dishonest doctor does not last long in a community these days—the word about him is spread fast. The hour of discredit and expulsion from the company of his brothers is hastened in its coming by every little piece of dishonesty. In El Paso, for instance, we are aware of but two dishonest doctors, and long ago they were dismissed in disgrace from the ranks of organized medicine. The chances of a patient selecting a dishonest doctor are becoming less and less as each year passes. As more people understand the purpose and the workings of the American Medical Association there is simply more demand by the public that their physicians be members of that association. And the sub-par practitioner does not last long in organized medicine. He must conform in conduct and standards or be ejected. These ejectives, by the way, are the ones who cry "persecution," when retribution visits them for their own omissions or commissions.

If the physician practices a specialty, what training has he had in his particular branch? And does he keep abreast of the changing times in his specialty? Does he attend, habitually and often, the scientific meetings of his medical associations and specialty societies? Does he spend regular time in laboratories and special schools? The specialist who "took a course in Vienna," with perhaps most of his course coming on cruises down the Danube or towns in Italy, and then came back with a trunk full of imposing diplomas to gather dust along with his thinking is a phenomenon of the past. To the basic training in his specialty the man of real value to his community adds constant attendance on clinics, graduate sessions, specialty societies. He contributes to medical literature. He is alert, aware, critical. It is not difficult to find out whether the specialist one has in mind is this type of physician or not. The man who is about to choose a specialist can readily determine just how progressive is the man he is judging.

What about skill and experience? These qualifications are admittedly difficult to evaluate in individual cases. Skill must be accompanied by good judgment. What societies have invited the physician to membership? What doctors in the community use him for their own patients? In other words, what do his fellows think of him? What are his hospital connections? Is he principally an "of-

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*Special Section*  
**Arizona State Medical Association**

PRESTON T. BROWN, M. D., *Associate Editor*  
403 Professional Bldg., Phoenix, Arizona

**THE WOMAN'S AUXILIARY**  
**ANNUAL MEETING, APRIL 18-20, 1940**

The tenth annual meeting of the Woman's Auxiliary to the Arizona Medical Association was held April 18-20, 1940, at the Santa Rita Hotel in Tucson.

Mrs. V. G. Presson of Tucson, president, presided over all of the meetings. The invocation was given by the Rev. Rush M. Deskins, D. D., of Tucson.

Mrs. Alvin Kirmse, president of the Pima County Medical Auxiliary, extended a very gracious welcome, and the response was given by Mrs. C. C. Craig of Phoenix.

REPORTS OF OFFICERS

*President's Report*—The report showed that there are now only two auxiliaries in the state, but that these two seem more firmly established and their accomplishments quite worth while. The membership this year was 134, which was a fractional growth over the previous year. The programs have been both social and educational. Both units have taken part in community work, such as the Community Chest, Red Cross roll call, and other civic welfare work. Mrs. Rollo K. Packard, the national president, was in Phoenix in December, at which time a board meeting was held. A luncheon was given in her honor, and it was a real pleasure and a great inspiration to have her with us.

*First Vice-President*—Since the first vice-president is also chairman of membership and organization, Mrs. Hayden's report told of there being two organized Auxiliaries in the state, and that attempts had been made to organize other but with no results.

*Second Vice-President and Program Chairman*—This report showed that the program and legislative chairmen have worked with the public relations chairman in presenting, not only to lay organizations but to our own Auxiliary members, the attitude and aims of the American Medical Association on the National Health Bill, and to acquaint not only the public but ourselves with the means for acquiring information on health.

The following committee chairmen gave their reports:

Cancer Project—Mrs. Alvin Kirmse.

Exhibits—Mrs. Hervey S. Faris. This report told of the plan to send two dozen cactus spoons as our exhibit to the National Auxiliary Convention in New York City in June.

Hygeia—Mrs. Joy A. Omer. Forty-eight Hygeia subscriptions have been sent in during the year.

Legislative—Mrs. James R. Moore.

Public Relations—Mrs. Joseph Madison Greer.

Publicity—Mrs. R. A. Wilson.

Mrs. Delbert L. Secrist, chairman of the entertainment committee, was introduced. She gave the details of the entertainment plans.

Mrs. S. H. Watson gave the report for the nominating committee, and the election of officers followed.

The report for the Maricopa County Auxiliary was read by its president, Mrs. John W. Pennington. Mrs. J. B. Littlefield, the outgoing president of Pima County Auxiliary, read their annual report.

The guest speaker on the Thursday program was Dr. Edward L. Dorsett, assistant professor of obstetrics and gynecology at St. Louis University College of Medicine.

A surprise number on the program Thursday morning was an informal talk on the movies by Mark Freeland, publicity director for the Columbia Motion Picture Company.

After the business meeting the guests had luncheon at the Pioneer Hotel. Door prizes were won by Mrs. R. M. Stump of Phoenix and Mrs. Hervey S. Faris of Tucson. Mrs. Stump's prize was a purse from the House of Hartwig and Mrs. Faris' was a beauty kit from the Martin Drug Company.

A style show by the Co-ed Shop followed the luncheon, and later in the afternoon the guests were taken to tea at the Veterans' Hospital.

At Friday morning's session Mrs. Robert B. Homan of El Paso, Texas, past National Chairman of Archives, gave a very interesting talk. Her subject was, "Interesting Items from the National Archives."

Dr. Charles F. McKhann, associate professor of pediatrics and communicable diseases, Harvard University Medical School, also talked at Friday morning's meeting. He based his talk on his experiences in China.

Because of the many questions asked about the National Health Act, Dr. J. D. Hamer of Phoenix was asked to come to the meeting to explain the bill and to tell the Auxiliary members why the American Medical Association objects to it.

Mrs. Donald Lewis presented the following courtesy resolutions: Whereas, the Auxiliary of the Pima County Medical Society and the Pima County Medical Society have so graciously entertained the members of other counties and visitors during their stay in Tucson, therefore, be it resolved that we extend to them a note of appreciation, and that these resolutions be entered in the minutes and a note of thanks sent to the following: Rev. Rush M. Deskins, Dr. Edward L. Dorsett, Mrs. Robert B. Homan, Dr. Chas. F. McKhann, Mark Freeland, Mrs. S. H. James, Santa Rita Hotel, House of Hartwig, Martin Drug Co., Elmo Co., Life Savers Corp.,



## President's Page

*"Wherever the art of medicine is found,  
there also is found a love for humanity."*

THIS month will see the American Medical Association in annual session, the meeting being concluded by the time this article appears in SOUTHWESTERN MEDICINE. At this annual session, the House of Delegates will act upon the proposal of the association for the medical care of the low-income group. The House, no doubt, will approve the plan. Something like a dozen states now have such plans for the care of this class, some of the plans meeting with success, while others, identical in provisions, are not progressing, due to the fact that the class to be benefitted is apathetic toward them. It seems to be human nature to cry for something not possessed, but, immediately possession is assured, to lose interest in the desired article or status of being, and set up a clamor for something else.

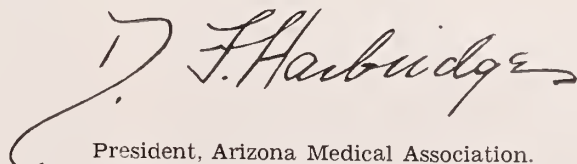
The general plan proposed by the American Medical Association includes the best features of the plans now in operation. It must be remembered, of course, that plans now in effect have had the direction of the American Medical Association. The pattern for medical care now to be afforded will provide Arizona and other states not operating under such plans an opportunity for putting one into effect as occasion may demand.

It is urged upon the membership that each read and study the accounts of the proceedings of the various committees and bureaus of the American Medical Association as they appear in the Journal of that organization. Study will do much toward breaking down present apathy or discontent on the part of some within the profession and provide them with an understanding that will enable them to advise and assist rather than to criticize. Each and every physician must study to understand and to help or the practice of medicine will be politically subsidized.

The true physician is an embodiment of the statement that, "Wherever the art of medicine is found, there also is found a love for humanity." Exercise that art and love in the practice of medicine and there will be little to fear from the changing order. Exercise the love for the "dollar" in the practice of medicine and there is everything to fear. The hardest problem of organized medicine today and for the future lies not in the necessity for readjusting our economic set-up, but rather in holding to high ethical standards in the demoralizing effect of commercialization.

The physician is taught from the outset, as the American Medical Association in its various deliberations and proposals is constantly pointing out, that medicine exists for the benefit of the afflicted and not the afflicted for the benefit of medicine. The plan of medical care as proposed by the American Medical Association is presented in that spirit, and in that spirit it should be received.

Fraternally yours,



President, Arizona Medical Association.

Luretone Corp., Wm. Wrigley Co., H. J. Heinz Co., and Constance Bennett.

Installation of officers was the last item on the program, the new officers being: President, Mrs. J. D. Hamer, Phoenix; president-elect, Mrs. B. B. Edwards, Tucson; first vice-president, Mrs. Alvin Kirmse, Tucson; second vice-president, Mrs. O. W. Thoeny, Phoenix; recording secretary, Mrs. Delbert L. Secrist, Tucson; treasurer, Mrs. D. A. Polson, Phoenix; director, Mrs. V. G. Presson, Tucson.

All members of the Auxiliary were invited to participate in a contest for the best 100-word essay on the subject, "Should a Doctor Take a Wife?" The prize was a copy of Clarence Budington Kelland's "Arizona," and was given by the Columbia Motion Picture Company. Nine members submitted essays. Mrs. Victoria Thompson of Tucson was declared the winner of the first prize, with an essay in which she upheld the affirmative but listed the many qualifications which a woman must have before she can be a success as a doctor's wife. Mrs. Leslie B. Smith of Phoenix and Mrs. Clyde E. Flood of Tucson won second and third prizes.

Friday noon a lovely luncheon was enjoyed at the El Conquistador Hotel. The program consisted of musical numbers by Mrs. C. Wayne Clappitt and readings by Alethea Smith Mattingly of the University of Arizona. Hostesses were Mrs. Roy Hewitt, Mrs. B. P. Storts and Mrs. Clyde Flood.

The concluding event was the dinner-dance at the Santa Rita Hotel Friday evening, which was preceded by a cocktail party at the same place.

The following appointments have been made by the President, Mrs. J. D. Hamer, for the coming year: Corresponding Secy., Mrs. Thomas H. Bate, Phoenix 537 W. Cypress St.

#### Committee chairmen:

Cancer Project .....	Mrs. Alvin Kirmse, Tucson 1301 N. Forgeus
Exhibits .....	Mrs. Hervey S. Faris, Tucson 30 Palomar Dr.
Hygeia .....	Mrs. Joy A. Omer, Tucson 2648 E. 7th St.
Legislative .....	Mrs. James R. Moore, Phoenix 1117 W. Latham St.
Public Relations .....	Mrs. Joseph M. Greer, Phoenix 765 E. McDowell Rd.
Parliamentarian .....	Mrs. C. A. Thomas, Tucson Santa Rita Hotel
Publicity .....	Mrs. C. C. Craig, Phoenix 727 Encanto Dr., S. E.
Historian .....	Mrs. George Irvine, Tempe 120 W. 7th St.

Members of the Arizona Medical Association on the advisory board are: Dr. Harley Yandell, Phoenix, Dr. H. W. Kohl, Tucson, and Dr. Jack B. Eason, Phoenix. Directors serving unexpired terms are Mrs. C. E. Patterson, Tucson, and Mrs. George C. Truman, Mesa.

Delegates to the national convention of the Woman's Auxiliary to the American Medical Association are Mrs. H. W. Kohl of Tucson and Mrs. Leslie B. Smith of Phoenix. The alternates are Mrs. V. G. Presson of Tucson and Mrs. James R. Moore of Phoenix. Other members planning to attend the meeting are Mrs. Delbert L. Secrist of Tucson, Mrs. E. Payne Palmer and Mrs. J. D. Hamer of Phoenix.

## INFECTIOUS MONONUCLEOSIS WITH JAUNDICE

(Continued from page 201)

well, except for unrelated disease. Hodgkin's disease may be accompanied by jaundice, but not at all by the type of blood counts we encountered in these cases. Pel-Ebstein fever is characteristic, while the nodes are much more massive and tend to remain enlarged.

Lacking to prove beyond doubt that these were all cases of infectious mononucleosis is the heterophile antibody reaction,<sup>3,4</sup> which we were unable to use on account of the difficulty in keeping a fresh supply of sheep cells, and because in nearly all these cases we saw the patient but a single time at the office. However, we feel that this test is by no means absolutely necessary, since it serves only to rule out lymphatic leukemia or to differentiate from a chronic infective adenitis, which can be satisfactorily eliminated by study of the cells.

The fact remains that infectious mononucleosis, as we know it now, is an exceedingly complex and multiform disease. Though various attempts at classification have been made,<sup>5,6</sup> it is possible that we may be in danger of taking too much for granted. Perhaps the disease is not a single entity, but two or more closely related diseases. The extremes of types, from those with sudden and severe onset to those with almost no constitutional reaction, from those with petechiae to those with no apparent rash, from those with membranous angina to those with jaundice and no sore throat, from those with very slight adenopathy to those with massive, from patients with the complication of hemorrhagic nephritis to those with no abnormal urinary findings, indicate that if these are conditions are not diverse infectious mononucleosis is capable of the most astounding variety of manifestations.

### CONCLUSIONS

1. A series of cases thought to be infectious mononucleosis with jaundice is presented, with direct and differential diagnosis.
2. A characteristic cell is described from our slides and from the literature.
3. The occurrence of two cases each in two families is noted as being unusual in so small a series.
4. The remarkable variations of the disease are noticed and the suggestion is made that the disease is not a single entity.

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## CHOOSING A DOCTOR

(Continued from page 203)

fice operator"? Sometimes this very habit stamps a physician as being unwilling to work under the open scrutiny of his fellows in an accredited hospital. And this possibility should lead to probing questions before his selection. Is the man a habitual price-cutter? Then good reasons should be established before selecting him—for usually fire-sale or cut-price merchandise is rather shoddy stuff. Perhaps this man cuts prices as a business move to shove off inferior ability on a public not too discriminating in its methods of judgment and selection. What class of people constitute the bulk of his practice? Are they among the more intelligent group of the community? In other words, has the more discriminating element placed its seal of approval on the prospective attendant by choosing him to minister to them?

Is he quietly confident, sympathetic, understanding? Or does he vacillate, make glib claims, boast

of marvelous cures, too obviously attempts to sell himself as the possessor of special secrets? Is he continually disparaging in his comments regarding other physicians, or is he too busy to pay a great deal of attention to the other man's business and shortcomings? Is he the type of man one would be proud to call one's physician, or does the mentioning of his name conjure a half-apology from the lips of his patients?

The delicacy and vital importance to all concerned in this matter of choosing a physician should lead to thought by medical men as to how best to advise the next person who asks how he is to know the best way of selecting a doctor for himself or his family. An intelligent, patient exposition of some of the criteria mentioned, plus others gathered by experience, will accomplish a great deal of good in the general field of physician-patient relationship.

## PROCEEDINGS OF EL PASO COUNTY TUMOR CLINIC

March 26, 1940

EL PASO CITY-COUNTY HOSPITAL

Present: Drs. Branch, Cathcart, Causey, Hardy, Peticolas, Smith, von Briesen, Waite, Webb, Powell.

*Case 1.* C. S., a 16-year-old Mexican girl who had had an adenocarcinoma removed from the left breast in January, reported again today, with another tumor in the same breast.

Dr. Hardy: It is rather an important thing to discuss, as so many young women, probably "cancer conscious," come to us with these benign growths in the breast. I would like to know what treatment is recommended.

Dr. Cathcart: The probability is that this is fluid and that aspiration will clear it up. This thing has come on since January.

Recommendation: Try aspiration on this second tumor.

*Case 2.* L. D., 49-year-old negress with tumors of larynx and pharynx, who was seen in tumor clinic February 2, 1940, was brought in again today, in a wheel chair. She is at present in the hospital, in the medical ward. It was reported that she had been on antiluetic treatment since February 16, and that her hemoglobin is now only 56%. A biopsy had been taken, which showed a "chronic inflammatory condition." Patient's throat today appeared to be improved, but her general condition is much worse than when last seen in tumor clinic.

Dr. Smith: If she is to be treated for possible gumma I think that the treatment should be pushed a little more. It is better to go slowly so as not to get too rapid a healing, with resultant scar formation, but I think it should be a little faster than at present.

Recommendation: Another chest x-ray. 1½ cc.

## SOUTHWESTERN MEDICINE FINANCIAL REPORT

Period of January 1 - June 1, 1940

A semi-annual financial statement for SOUTHWESTERN MEDICINE will appear henceforth in the June and January issues. Herewith is the financial statement for the period of January 1 - June 1, 1940:

TOTAL RECEIPTS ALL SOURCES	
Balance, Jan. 1, 1940	\$1,246.01
Subscription Dues:	
Arizona .....	\$752.00
New Mexico .....	20.00
S. W. Med. Assn. ....	150.00
	<u>922.00</u>
	\$2,168.01
TOTAL DISBURSEMENTS	
Editor .....	\$512.00
Secy's office, stamps, supplies, expense..	135.00
Printer .....	115.36
	<u>762.36</u>
	762.36
Total balance, June 1, 1940 .....	\$1,405.65

Note: Subscription dues listed are for receipts for period indicated only, El Paso Society and New Mexico having remitted \$240.00 and \$492.00, respectively, for previous period. The period June 1, 1940, to Jan. 1, 1941, will include further subscription dues for the current year.

Circulation, as of June 1, 1940 ..... 978

Respectfully submitted,

D. F. HARBRIDGE, M. D., Secy.-Treas.,  
Phoenix, Arizona.

of bismuth subsalicylate once a week intramuscularly. Leave off the mercury. Continue potassium iodide by mouth. Give blood transfusions. Bland's pills. Check up on her to see if she eats; if not, give her some food that she can handle.

*Case 3.* R. G., 66-year-old Mexican man who has been coming to tumor clinic occasionally since July 11, 1939, reported again today. His entire right cheek is greatly swollen and very tender to touch. The left axilla also is very tender.

Dr. Cathcart: This old scar on the right cheek below the eye is from an auto accident some years ago. He has had a slight drainage from it ever since, and I believe this sinus has been stopped up. Possibly a sinus from the parotid, and I think there may be parotid fluid in there. I think he should be given the benefit of surgery on this left axilla, and some novocaine put into that cheek and drainage re-established.

Recommendation: Surgery for the left axilla. Drainage to be re-established in right cheek. X-ray of chest.

*Case 4.* M. J., case reported by Dr. Powell, and autopsy findings by Dr. Webb.

Dr. Powell: The patient was a Mexican woman, a housewife, 39 years of age. No history was obtainable as patient was in coma on admittance, and was not reliable when she did regain consciousness.

Physical examination: Patient was in poor general condition. Temperature, 98.2 (r.); pulse, 52, weak; respirations, 28. She was well nourished. Comatose. Pupils did not react. Left pupil dilated and irregular. Right pupil pinpoint. Teeth very carious, with abscesses. Throat could not be examined. Upper lids semiptosed. Neck negative. Both lung fields essentially clear. Heart: Rhythm regular. Rate slow. No apparent valvular defect. Abdomen: No apparent areas of tenderness. Mass palpable from symphysis to umbilicus, apparently the uterus. Normal female external genitalia. Skin showed a scaly muscular rash over the shoulders posteriorly. Bones and joints, and glandular system, negative. Neuromuscular: Upper extremities spastic, with increased deep reflexes. Deep reflexes increased in lower extremities. Positive Babinski. Superficial reflexes lost. No nuchal rigidity. Pupils as described.

A working diagnosis was made of (1) encephalitis, probably epidemic, (2) pregnancy.

Laboratory findings: March 6, 1940—Urinalysis: Innumerable wbc, slight trace of albumin. Blood: rbc, 5,330,000; wbc, 13,000; hgb, 86%; polys, 88; lymphos, 2; Kahn, negative. March 7, 1940—Spinal fluid: wbc, 3 cells; amount and appearance, 5 cc., clear; sugar, positive; globulin, a trace; Kahn, negative. March 11, 1940—NPN, 60.

Patient regained consciousness the day after admission, but was stuporous, and lapsed into coma again in a few days. She expired on March 16, 10 days after admittance.

The final diagnosis (clinical) was encephalitis, or possible brain tumor. The abdominal mass

which was at first thought to be a pregnancy was found to be distended bladder.

Dr. Webb: Autopsy showed thoracic, pelvic and abdominal viscera essentially negative. The brain, on the surface, showed nothing to suggest intracranial lesion, but on sectioning it we found two tumors, one in the occipital lobe deep in the brain substance, and one in the parietal lobe just beneath the cortex. Spongioblastoma is sometimes diagnosed as encephalitis or apoplexy. The diagnosis is often mistaken.

Diagnosis: Glioma of left cerebral hemisphere.

## SPECIAL ARTICLE

### MEDICAL FOOTNOTES DURING ORIENTAL WANDERINGS

NELSON D. BRAYTON, M.D.  
*Miami, Arizona*

There are 70,000,000 of these Japanese scattered over Japan's main islands, and her Asiatic colony of Korea, now called Chosen, accounts for 20,000,000 more.

They are little people. Their street cars, their buses, their railroad trains, their doors in their homes are built low. Their opera seats, their restaurant chairs, their beds in the "foreign hotels" are all smaller than the European or American. Their personal physique is that of a diminutive race, but their intellect their capacity of vision and foresight, their capacity of enjoyment, their ego and their numbers stamp them with the major nations of the world.

This capacity to initiate and their ability to imitate has been creative of the new Japan. Universities of 10,000 students, schools of medicine, dentistry, education, arts and sciences, economics, navigation and philosophy abound, and their scientific acumen has been proclaimed by all in their national heroes of medicine, *Kitasato-Nogouchi-Shiga*.

A race of 90,000,000 progressive, happy people has to be recognized and their scientific discoveries must be analyzed, their application of facts to hygiene must be scrutinized, their initiative characteristics must be challenged. Let us analyze some of their applications of scientific facts to the practice of hygiene and medicine.

Leprosy—Yes, Japan has its lepers; 20,000 plus. The imperial government has given one island to their care and cure. There are 6,000 on Deer Island alone, with a staff of seven doctors, 300 attendants with a family life of over 1,000 more, to assist in care and attention. This is purely a federal project, and only for the main island. In Korea alone there are four other leper hospitals managed by the British or American leper missions, which take care of 4,000 more. Off the mainland in the Inland Sea is another large leprosarium.



Statistics (like photography in Japan) are not available of this island. But conservative estimates place the number throughout Japan at 11,000 confined lepers, with an equal number on the outside. Recently an epidemic of leprosy was reported in the troops in China, and, although denials were in order, the medical officers promptly requisitioned large quantities of Chaulmoogra oil.

Tuberculosis is another vexing problem. Estimates of 3,000,000 active cases of tuberculosis are given and no sanatoria are available. Milk is not easily procurable in Japan. Fats from animals are practically unknown. Oil of soy bean extract is used extensively and fish is their natural proteid diet. Thus occurs the early breakdown and demise of many of the youth of the country.

Recently an attack of influenza which gripped Japan called for the wearing of nose and mouth masks. All Japan seemed to be muzzled, and babies as well as grandparents proceeded around their homes or businesses with these curious nose and mouth masks. In the country village the belief is universal that the evil spirits of disease are kept out of the body by this process of straining the air. Even at that, this is a step in advance of praying before a shrine or eating some nauseous lizard to prevent disease.

The social evil in Japan—As it is popular nowadays to talk of our social evil problem in polite society, due to our Thomas Parran expose of our theoretically high syphilitic rate, it may not be out of place to mention the problem of the social evil in Japan.

It is a police problem in Japan. Yoshiwara girls, Geisha girls and waitresses—the three classes who are most prone to transmit venereal disease—are all licensed by the government. The last available statistics showed 173,000 so licensed, Japan having followed the lead of those European nations in licensing and regulating a vice which no government has ever eradicated. Three different movements in the diet to change this position of Japan in regard to regulated vice have failed. Regularly inmates of the Yoshiwara districts must submit to biweekly bacteriological or serological and medical examinations. At least 60,000 of them are so examined every week. In addition, ordinary preventive measures and contraceptive articles are sold openly at special stores and are made easily procurable for the masses. The army and the high schools teach the results of promiscuity. Japan does not have a high venereal rate.

Obstetric cases are still cared for in the majority of cases by midwives. In the larger cities some of the women employ physicians. This is not the rule. The humor of this serious branch of medicine is augmented by the fact that there is a national system for the disposal of placentas. For a fee of 50 sen (10 cents) the police of the prefecture in which the child is born and registered receive the placentas and direct their removal to the proper crematory, where they are destroyed. Placentas must be disposed of within 24 hours of the birth

of the infant, and if not so disposed of the midwife loses her license. As there are no privies or sewer systems in Japan (even in the large cities, such as Tokyo or Osaka) where these placentas might be made way of it is easily seen that a central placenta disposal bureau is a very necessary addition to the governmental bureaus.

This brings us instantly to the question of hygiene and sanitation. In common with all other sewerless oriental nations, Japan has her vexing sanitary problem. The adequate disposal of night-soil is her next great problem. With all her advancement shown in every other field of scientific endeavor the question naturally arises: Will she assume responsibility and put in a modern sanitary and toilet system?

I think not. In the first place, sewer systems are expensive. So is war, and Japan has a large size war on her hands. In the second place, the people cannot be easily educated to use modern conveniences. In the third place, they use the eliminative products of human digestion for fertilizer. Night-soil is highly prized for urban use. Along the highways are frequent open toilets and latrines which drain into large 50-gallon crocks. The privy tender comes along with his tin ladle, removes the droppings. They are placed upon the farmer's land, and presto—abundant fields of fresh vegetables, rice or grain.

Such practices may be abhorrent to western noses and civilization, but they are the practice in old Japan. And how else is a country which is straining every economic sinew to conserve its nitrates for the purpose of war going to fertilize its land? Truly, night-soil must be conserved, and the small army which handles the kegs and barrels of this human refuse in a country which has only a few cows and horses must be admired if at the same time they are to be pitied. While it might be that the introduction of a few hundred modern Standard Oil, Texaco or Shell stations would serve as object lessons in sanitation, it is very dubious in my mind that the agriculturists would submit to any such sanitary revolutions.

Despite these humiliating observations we must not consider Japan a backward medical nation. Any country that has produced a Shibasaburo Kitasato (discoverer of the plague in 1894), any country which has mothered a boy with a withered, shriveled arm, whose function was all but destroyed by fire, and yet who rose to pilot the fame of Rockefeller Institute to the four corners of the earth, as did Hideyo Noguchi; and country that has produced Kiyoshi Shiga, who discovered the Shiga bacillus of dysentery and its accompanying serum as a curative measure; any country which has a St. Luke's (Tokyo) Hospital in its midst; any country which boasts the Imperial Epidemic Laboratory, where are conducted various bacteriological researches relating to epidemics and other diseases; any country broadminded enough to present through popular subscription a laboratory, the "Kitasato Institute," to one man in honor of a

great epidemiologic bacterial discovery, is anything but a backward nation.

And so in passing on into China after visiting in Taiku, Korea, the leper hospital organized by Dr. Archibald Fletcher and which boasts the only leper preventorium in the world for children untainted but born of leprous parents, and where Mr. and Mrs. O. Vaughn Chamness of Phoenix, Arizona, are engaged in practical missionary training and rehabilitation of its inmates, we salute the discoverers and explorers, these heroes and laboratory workers who have immortalized their names in Japanese medicine and saved the lives of countless millions on the face of the globe.

Kitasato, Nagouchi, Shiga! Here in old Japan we bow in humble reverence at the medical shrines of those who have caused to be carried the torch of learning and scientific accomplishment to the four corners of the earth.

Ed.—This article, interesting, timely, is printed as submitted.

## COMMUNICATIONS

Sir:

We have received and thank you for the copy of the January, 1940, issue of *SOUTHWESTERN MEDICINE*, which you sent in response to our request of April 23. We are grateful for the space you gave, on pages 23 and 31, to the piece on "1940 Census."

Tabulation of returns from the field on the 1940 census is just now beginning. Within a few months considerable information on the nation's population, resources and trends will become available. It is the function of the periodicals service section to serve editors of periodical publications who may request the information that is contained in the census records. We want to give you this service at any time you may care to call on us. We will be grateful if you will let us know those things which are of especial interest to you, so that we may supply you as advantageously as possible.

Sincerely yours,

ROSCOE WRIGHT,  
Chief of Public Relations.

By A. W. von Struve, Periodicals Service Section.

Sir:

The Big Bend Medical Society met May 7 in San-derson, Texas, with Dr. R. E. Lester and Dr. J. Campbell Kern, president of the group, as hosts. The program presented consisted of a paper and lantern-slide demonstration on "Gastros-copy" by Dr. Norman Giere, El Paso; report of a case of gastric hemorrhage by Dr. Malone Hill of Alpine; "Allergy," by Dr. Orville Egbert, president of the Southwestern Medical Association, El Paso.

Questions and discussion by those present added much to the value of the papers presented.

The work of the National Physicians Committee for the Extension of Medical Service, particularly the educational campaign now in process of development through display presentations in the *Saturday Evening Post* and other magazines, was discussed by Dr. Joel Wright, the secretary of the society. One attractive double-page display will appear in the *Saturday Evening Post* during the week of the Republican national convention and another during the week of the Democratic national convention.

The Alpine group invited the doctors to meet in Alpine for the next regular meeting in June.

Dr. Egbert gave the doctors a cordial invitation to attend the clinical congress of the Southwestern Medical Association in Tucson, Ariz., in November.

Those present at the dinner given by Drs. Lester and Kern were: Dr. Egbert and Dr. and Mrs. Giere, El Paso; Dr. Maurice Barrett, Fort Stockton; Drs. Jeter, Hill, Lockhart and Wright, Mrs. Wright, Mrs. J. D. May, Alpine; Dr. and Mrs. Kern, Dr. Lester and Mrs. Walker, Sanderson. Dr. Gipson, Fort Stockton, joined the group during the program hour.

JOEL WRIGHT, Secy., Alpine, Texas.

## NEWS

### General

According to the American Journal of Clinical Pathology, numerous complaints have reached the Registry of Medical Technologists regarding the activities of a person in Red Bank, N. J., who has launched an organization styled the "American Medical Technologists," which purports to issue certificates of qualification. It is soliciting membership especially among graduates of non-approved schools or those who are eligible for examination by the standards of the registry.

This person has never taken the registry examination, but assumes the designation of M. T. after his name in his drive for membership. He has also presumed to give approval to a number of commercial schools which are not approved by the registry.

This enterprise is not sponsored by any scientific society, but appears to be motivated by commercial aspects, as a \$5.00 registration fee is solicited from those desiring to join.

To obviate any confusion of this movement with the work of the Registry of Medical Technologists of the American Society of Clinical Pathologists, the warning is issued to all interested in maintaining high standards to disseminate the information about the standing of the so-called "American Medical Technologists."

The old autopsy house where Osler worked at



Blockley has been restored as the Osler Memorial Building, and will be dedicated on the grounds of the Philadelphia General Hospital, at Curie Ave., near 34th and Pine Sts., Philadelphia, Pa., at 2 p. m., on June 8, 1940.

Original furnishings, including the necropsy table, have been collected. The painting by Dean Cornwell, N. A., of New York, entitled "Osler at Old Blockley," later to be hung in the building, will be on exhibition during the celebration.

There are facilities in the building for the housing and preservation of relics of old Blockley, as well as Osleriana. The committee would welcome any additions to this collection.

A cordial invitation is extended to those who are interested, and especially those who are planning to attend the American Medical Association convention in New York City June 10 to 14.

### *El Paso*

A regular staff meeting of the Hotel Dieu Sisters' Hospital was held Tuesday, May 7, 1940, at 12:10 p. m., in the auditorium of the nurses' home. Luncheon was served. The program was as follows: "Generalized Exfoliative Arsenical Dermatitis," Dr. R. P. Hughes. Discussion, Dr. Earl Rogers. "Fracture of Right Humerus, Compound Comminuted; Gunshot Wound Chest Wall," Dr. Louis Breck. Discussion, Dr. J. L. Stowe.

A regular meeting of the City-County Hospital staff was held Wednesday, May 15, 1940, at 6:30 p. m., at City-County Hospital. The program was as follows: "Case of Perforated Ileum," Dr. J. D. Peticolas. "Case of Focal Necrosis of the Liver," Dr. J. Mott Rawlings. Discussion of both cases by Dr. W. W. Waite.

A regular meeting of the El Paso County Medical Society was held May 13, 1940, at 8:00 p. m. in the tea room of Hotel Cortez. The program was as follows: "Dissecting Aneurysm of Aorta," Dr. G. Werley. Discussion by Dr. W. W. Waite. "La Peyronie's Disease," Dr. D. von Briesen. Discussion by Dr. W. R. Curtis.

Dr. M. F. Spearman, of El Paso, left May 27 for Pensacola, Fla., where he will take a post-graduate course in aviation medicine for six weeks at the Naval Air Station. Dr. Spearman is a lieutenant in the Naval Reserve.

A regular meeting of the El Paso County Medical Society was held May 27, 1940, at 8:00 p. m. in the tea room of the Hotel Cortez. The semi-annual business meeting was held. This was the last meeting before summer vacation.

## AUXILIARY NEWS

Mrs. James W. Laws, who was installed as president of the Woman's Auxiliary to the El Paso County Medical Society at the annual luncheon at the Country Club, Monday, May 20, 1940, announced her assisting committees. They are: Mrs. Arthur Black, general health and program; Mrs. Henry Safford, public relations; Mrs. Robert Thompson, child welfare; Mrs. Paul Gallagher, vital statistics; Mesdames B. F. Stevens and J. A. Rawlings, weed eradication; Mrs. W. E. Vandevere, social; Mrs. Will Rogers, courtesy; Mrs. H. H. Varner, music; Mrs. W. W. Britton, telephone; Mrs. A. D. Long, physical examination; Mesdames J. L. Murphy and Francis Snidow, year book; Mrs. Louis Breck, publicity; Mrs. Gerald Jordan, historian; Mrs. R. B. Homan, parliamentarian; Mesdames Orville Egbert and T. C. Lidell, ways and means; Mrs. J. W. Cathcart, "Hygeia"; Mrs. Ralph Homan, decorations.

## MISCELLANY

### AVIATION MEDICINE AND OPHTHALMOLOGY

The latest development of a specialty in the profession of medicine is Aviation Medicine. Its outstanding subjects are ophthalmology, otolaryngology, psychology and internal medicine. It embraces particular phases of these divisions of the art.

Recent wars have clearly demonstrated that the nation having supremacy in the air will have its adversary at its mercy and may be enabled to destroy him. To achieve such supremacy mechanical equipment is of great importance and requires the greatest effort and the longest time. The selection of young men for this highly technical work can be done only by physicians well trained in the particular methods of examination. Our country has only too few doctors so trained. The experts in this field are largely in the Medical Corps of the Army and the Navy and the Civil Aeronautics Authority. Since they have had the widest and largest experience in the field of aviation medicine, they are obviously highly qualified to instruct the civilian personnel where but few have had such opportunities. There are many thousand pilots to be trained for the increasing demands in civil and civil-military aviation, and the Air Corps of our Armed Services are undergoing great expansion.

With the world aflame with war and all the hatred and insane murderous rage it engenders, it behooves our country to prepare for any emergency. It is not impossible that we, too, may have to fight for our very existence and the lives of those dearer than life to us. Preparation for warfare in the air and particularly the training of pilots requires much time. The selection of those

qualified to take such training requires particularly endowed physicians who must themselves be trained in this new art.—*Med. Ann. D. of C.*

#### MEDICINE FOR SALE

And now the great American public hears about medicine from Boston—

"The home of the bean and the cod  
Where Lowells speak only to Cabots  
And Cabots speak only to God!"

But when, abandoning precedents of immemorial antiquity, a Cabot addresses the Dependency as on page 32 et seq. of the *American Magazine*, April, 1940, in an article entitled "Give the Patient a Break," with cartoon illustration, the ordinary or working physician can only pray that some day the venerable and time-honored social customs in Boston will be restored.

Dr. Cabot designates himself a reformed criminal: "At the end of that year I realized I was making considerably more money than any honest man ought to." He admits that when young he played happily with the dirty little boys on the wrong side of the railroad tracks, but—he is 30 years older now. And from the experience, the wisdom gained in that time, he pleads: "Give the Patient a Break." After a thundering excoriation of the profession, he shouts "thousands of Americans will have to make a Hobson's choice between third-rate medicine and bankruptcy." Unless, of course . . .

Unless, they take Dr. Cabot's favorite prescription of group-medicine. The special pleading of the salvationists has been harrying the public along three main lines in the recent journals:

High Cost . . . private practice . . . to hell with it.

Low Cost . . . group practice . . . good

Free . . . . . State Medicine . . . better yet.

In the last analysis it is the character of individual practitioners which is the safeguard of the public interest, not the system of practice. But, private practice has in the past because of its moral pressure, produced that character in physicians in spite of well-publicized failures. It is still to be shown whether group practice, with its divided responsibility and its buck-passing potentialities, can meet, by and large, the requirements for good medical service everywhere in the Nation. Enthusiasm is a good thing, but facts and character have their place, too, in medicine. Give the Patient the Truth!—*Westchester Med. Bull.*

#### SULFAMETHYLTHIAZOL

Although still in the experimental stage, Sulfamethylthiazol is gaining clinical support. Originally developed and already proved to be efficient in *Staphylococcus Aureus* infections, reports from conservative sources indicate value in other coccus invasions. Most interesting has been its use in *Streptococcus Viridans* Bacterial Endocarditis. Given both intravenously and by mouth in sufficient dosage to produce a blood concentration of about 5 mgm., it has produced encouraging results.

Present information about the drug is limited to a few facts. It is known to be less toxic than sulfanilamide or sulfapyridine and is better tolerated. However, once started, it must be continued until the end of treatment. Temporary withdrawal and subsequent readministration may cause a toxic reaction. Finally, it seems to have a greater tendency to form renal stones than the other two.

The drug is available to hospitals, free of charge, provided that they are willing to make complete laboratory and clinical reports of cases to the manufacturer.—*Conn. St. Med. J.*

#### TUBERCULOSIS PARAGRAPHS

Institutional care is always necessary at one time or another in treating tuberculosis, because of communicability. There is a considerable class which may be regarded as custodial cases, and there is need for domiciliary institutions where they can be cared for. When returned to the community results are often disastrous to them and their families. After-care and vocational rehabilitation are essential in restoring the patient to normal life.

Masur, J., *Hosp. Management*, Oct., 1939.

Patients subject to febrile reactions following air refills have little or no reaction following nitrogen or helium refills. The febrile reaction probably represents a flare-up of tuberculous pleuritis following the increased oxygen supply of the refill.

Pugsley, H. E., M.D., *Amer. Rev. of Tuber.*, March, 1940.

There is no single absolutely reliable sign or symptom of activity in tuberculosis. Its determination must rest upon the most careful and thorough consideration of all of the general and local symptoms and signs, together with the results of the various laboratory and clinical studies.

Miller, James Alex., N. Y., *State Jour. of Med.*, Dec., 1939.

The sputum-positive cases are a matter of grave concern. They insist upon being discharged to their families and the community; yet segregation is of first importance in controlling tuberculosis. By segregation did our ancestors rid the country of leprosy.

Welsh Nat'l. Mem. Assn. Report, *Tubercle*, Nov., 1939.

The American Academy of Pediatrics is sponsoring an educational campaign to create a demand for protective examinations on the part of employers and employees. According to the Academy approximately 2% of the teachers actively engaged in elementary and secondary schools in the United States suffer from tuberculosis.

The Survey, Jan., 1940.

The possibility of utilizing the general hospital as an effective medium for case-finding in tuberculosis has not been sufficiently explored. The fact that a person is admitted to a general hospital for a condition other than tuberculosis should never be accepted as a guarantee that such person does not have significant tuberculous disease. In a study of 4,853 adult admissions to 14 general hos-



pitals in New York State, 1.1% showed clinically significant tuberculosis and 0.6% unsuspected tuberculosis.

Plunkett, R. E., M. D. and Mikol, Edward X., *Amer. Rev. of Tuberc.*, Mar., 1940.

A disease which cannot be overlooked in a health report is tuberculosis; not only because it is still responsible for a great many unnecessary deaths but also because the tuberculosis death rate is considered a fairly reliable index of a community's economic, social and health status.

Bul. Milwaukee Health Dept.

#### TOXIC MANIFESTATIONS OF SULFAPYRIDINE

CONDITION	No. of Report- ers	No. of Cases	No. of Pa- tients	Per Cent
Nausea, vomiting .....	16	285	790	36
Nausea, vomiting, severe.....	3	33	250	12
Dizziness, restlessness .....	3	18	190	9
Cyanosis .....	4	15	187	8
Renal symptoms, etc. ....	2	4	75	6
Fever .....	2	5	110	5
Anemia, mild .....	8	16	354	4
Drug rashes .....	4	9	259	3
Anemia, severe, hemolytic.....	7	5	463	1
Neutropenia .....	10	5	680	1
Toxic hepatitis .....	3	3		
Deafness .....	1	1		

—*Med. Ann. D. of C.*

#### VENEREAL DISEASE QUACKERY

Venereal disease quackery is on the increase and today constitutes one of the major obstacles to the public health control of syphilis and gonorrhea, officers of the United States Public Health Service state in a nationwide N.B.C. broadcast.

Drugstore "back counter prescribing" has increased substantially during the past several years. Many different "patent remedies"—produced both locally and on a national scale—are on the market and sold in large volume. There is indication that the sales curve has been rising during the past six or eight years.

Large numbers of unethical practitioners—"men's specialists," herbalists, mail-order experts—are active, although quack advertising has apparently decreased in volume.

More persons evidently are going to drugstores and quacks for diagnosis and treatment of venereal disease than are going to reputable physicians. Exploitation of persons who are, or think they are, sick with gonorrhea or syphilis runs into tens of millions of dollars annually.

These trends were reported in a survey conducted by the American Social Hygiene Association in co-operation with the United States Public Health Service ("Illegal and Unethical Practices in the Diagnosis and Treatment of Syphilis and Gonorrhea," by Mary S. Edwards, statistician, and Paul M. Kinsie, chief of field study, of the American Social Hygiene Association, published in the January, 1940, issue of *Venereal Disease Information of the Public Health Service*).

Personal interviews by trained investigators posing as "friends" of presumably infected persons were carried on in 1,151 drugstores in 35 cities in 26 states. Sixty-two per cent of the drugstores visited diagnosed the diseases and offered to sell remedies for alleged syphilis or gonorrhea, especially the latter. Thirty-one per cent did not attempt to diagnose, but stocked, and were willing to sell, bottled remedies, especially when asked for them by name. About half of those who sold remedies urged the inquirer to see a doctor. Only 7 per cent of the entire number refused to diagnose or sell remedies.

About 30 different preparations were found to be generally available as remedies throughout the nation. Only 3 or 4 were recognized drugs, the remainder consisting of completely worthless mixtures as far as any effect on syphilis or gonorrhea was concerned. Mixtures made from such ingredients as boric acid, berberin, glycerin, etc., of only a few cents value are sold at prices ranging from \$1.00 to \$3.00 a bottle.—*N. Y. St. J. of Med.*

#### MISUSE OF SILVER PREPARATIONS

In these days of marked gold scarcity, we notice with dismay an over-abundance of silver, not in the pockets, but in the bottles of the medical profession and patients. Medically and therapeutically the use of silver and silver preparations should be regulated.

The silver derivatives are as popular with the general public as aspirin, and, lately, as the barbiturates, epinephrine and sulfanilamide. The public learns of their efficacy without their dangers and side actions. This is in a large measure due to the unnecessary and sometimes harmful diffusion of information to the layman through the medium of the daily press, radio and pseudo-scientific publications appealing to the general public. Sharing the guilt with the physician is the counter-prescribing and dispensing pharmacist who refills indefinitely a prescription designed to be used only over a short period of time.

The continued use of silver preparations leads to a cosmetic defect or blemish difficult to hide, argyrosis or argyria. We have seen a large number of cases of this disorder within the past six months, and think a word of warning is timely. These cases were all due to use of the silver derivatives, mainly argyrol, rather than to silver nitrate.

Argyrosis is a condition which, when present, causes embarrassment both to the patient and the physician. It is difficult to disguise or conceal the dirty gray or yellowish brown discoloration of cornea, conjunctiva, and surrounding structures. The individual tissue susceptibility to silver preparations varies widely, and a period of treatment that might cause on ill effects in one person will lead to permanent discoloration in another. Hence, caution should be the watchword in the use and prescribing of the silver derivatives. A rigid supervision can be exercised over all patients under active office treatment. But, if a silver preparation

is prescribed for home use, the patient should be warned its use will lead to argyrosis if continued indefinitely. The recipient of such a prescription should be warned also against recommending it to others for conditions superficially resembling his own.

A patient with a well-defined argyrosis is a walking testimonial to the inefficiency and carelessness of the treatment of Dr. X, and may leave the luckless practitioner in danger of a suit for malpractice. Rather than risk such an eventuality, it is better to exercise caution and supervision in the use of the silver derivatives.—*Wisc. Med. J.*

#### BRIEFS FROM SHATTUCK LECTURE

... Osler's *Textbook of Medicine*, when it first appeared in 1892, was like a breath of fresh air in a stagnant room. It was conceived by a man in his prime, who, unlike any medical textbook writer gone before, was profoundly versed in two indispensable elements: knowledge of pathology, and wisdom gained through a large experience with patients. And medicine has not changed in this regard. The really great teacher in the medical school or in the sickroom endeavoring to help the troubled family doctor is the man who knows pathology as well as clinical medicine.

... Suavages in his ten-volume work classifies diseases after the Linnean system of plant classification and makes about 2,500 varieties or species of diseases. Alibert reduces the number of families to 10, as follows: "gastroses, enteroses, chloroses, uroses, pniumonoses, angioses, leucoses, adenoses, hetmophecoses, blennoses." The first family, the "gastroses," is divided into 13 genera, which are again subdivided into species. Genera are designated by the following terms: "plorexie, heterorexie, dysorexie, polydipsie, adipsie, lenterie, antemesie, gasteralgie, gastrite, aquirrogastrie, gastrobrosie, gastrocelie." The species in the first genus are: "Polyrexia bovina, canina, lupina," a classification based on analogy to the appetites of cattle, dog and wolf.

... This brings me to speak of the work of S. Weir Mitchell, probably the most distinguished physician of his time, whose observant eye saw a number of new diseases. In 1878 he published his famous essay on the red disease of the extremities, erythromelalgia, a vasomotor neurosis. The disease is commonest in men and affects principally the legs, the chief symptoms being heat, redness and a throbbing pain. Mitchell apparently was the first to recognize eye-strain headache.

... A contribution of signal importance was made during the Civil War by the Philadelphia clinician, Jacob M. Da Costa. Da Costa was a native of St. Thomas, West Indies; he received his medical education in the Jefferson Medical College and in European universities. As professor in his alma mater and as physician to the Pennsylvania

Hospital he became the revered teacher of thousands of students. He was a member of a great medical faculty, which included Samuel D. Gross, Joseph Pancoast and William W. Keen, three of the most famous surgeons in our history. Da Costa's classical essay to which I refer was entitled, "Observations on the Diseases of the Heart Noticed Among Soldiers, Particularly the Organic Diseases." In this essay he devoted a section to what he called the "irritable heart," which he later expanded in his textbook on medical diagnosis. The condition seemed to be more or less forgotten until the World War, when it became an important factor in the invalidism of men in the service. It was then called by the high sounding name of "neurocirculatory asthenia" in the American Army and "disordered action of the heart" in the British Army; but none of the modern descriptions excel that of Da Costa.

... It is not surprising that an important disease of the teeth should have been first recognized, at least carefully studied, by an American dentist. John M. Riggs was born in Seymour, Conn.; he studied medicine at Jefferson Medical College, and dentistry with Horace Wells, of Hartford, Conn. Riggs pulled a tooth for Wells, who had taken nitrous oxide gas, the first time that such an extraction was done under that anesthetic. Riggs gives an exhaustive description of inflammation of the gums and absorption of the gums and of the alveolar process. He is conscious of the fact that the disease is not new, but his description is complete and has not been surpassed. That is why the disease, pyorrhea alveolaris, is also called Riggs' disease.

... One hundred years ago a number of American physicians, chiefly from Boston and Philadelphia, with a few from Charleston, S. Car., went to Paris in order to sit at the feet of the most brilliant group of medical teachers ever gathered together in one place and at one time. Laennec, Broussais, Bayle, Chomel, Andral, Bretonneau, Rayer, Alibert and Piorry were creating a new era in medicine. The humoral doctrines, the futile speculations on the nature of disease that held sway in Paris toward the close of the eighteenth century, and which were destined to dominate the German school far into the next generation, were giving place to a clinico-pathological concept of disease based on a careful correlation of the findings at the bedside and the lesions observed in the mortuary.

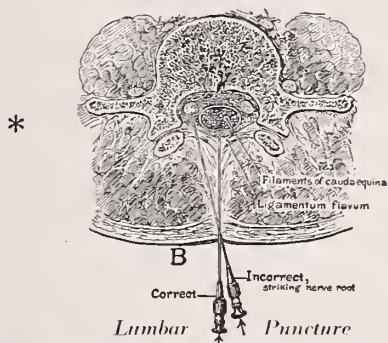
... Hyperinsulinism owes its identification to Seale Harris, of Birmingham, Ala., who first called attention to it in 1924. Hyperinsulinism leads to hypoglycemia, and this in turn produces symptoms comparable to those following an overdose of insulin. In some cases a tumor of the pancreas consisting of islet tissue has been found. Cures have been achieved by the removal of such tumors.

—*Shattuck Lecture, N. E. J. Med., Vol. 219, No. 16.*

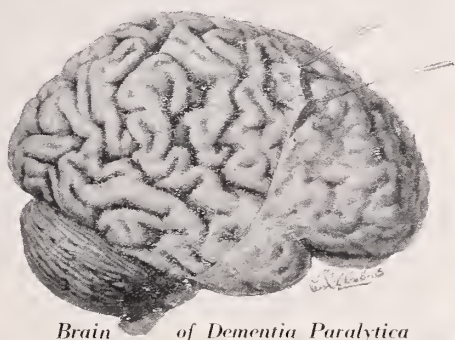


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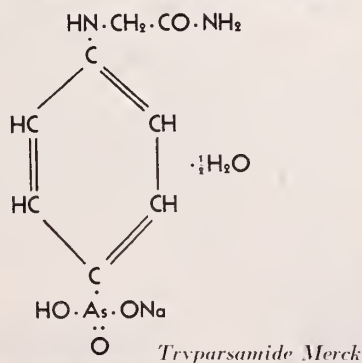
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\* (*The Modern Treatment of Syphilis*, by Joseph Earle Moore, M. D. Charles C. Thomas, Springfield, Ill., and Baltimore, Md., 1933.—By courtesy of author and publisher.)

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## DANGERS OF SHOCK THERAPY

As the initial enthusiasm about shock therapy has waned, more attention has been given to the dangers involved in such drastic procedure. There have been an increased number of reports on the destructive effects of insulin and Metrazol on brain tissue. In fact, the seriousness of this untoward possibility is not a negligible consideration in attempting to evaluate the soundness of shock therapy. Dislocations of joints, fractures of the long bones and crushing of vertebrae are admittedly disadvantages that accompany the Metrazol convulsions in a small percentage of cases. Proper nursing surveillance during treatment, and thorough examination before treatment in order to determine the presence or absence of bone disease, may in large part do away with such eventualities. Possible damage to the brain cells cannot, on the other hand, be guarded against with a comparable degree of certainty. A specific number of shock insults to the brain of one patient may result in no appreciable injury, while the same number of comas or convulsions may cause serious and irreparable damage to another. There are no reliable standards by which to judge how much treatment a patient may undergo without injury of serious proportions. Even though the patient may show clinical improvement or recovery following shock therapy, we do not know that future relapses may not be due, at least in part, to the traumatizing effect of the therapy itself.—*N. E. J. of Med.*

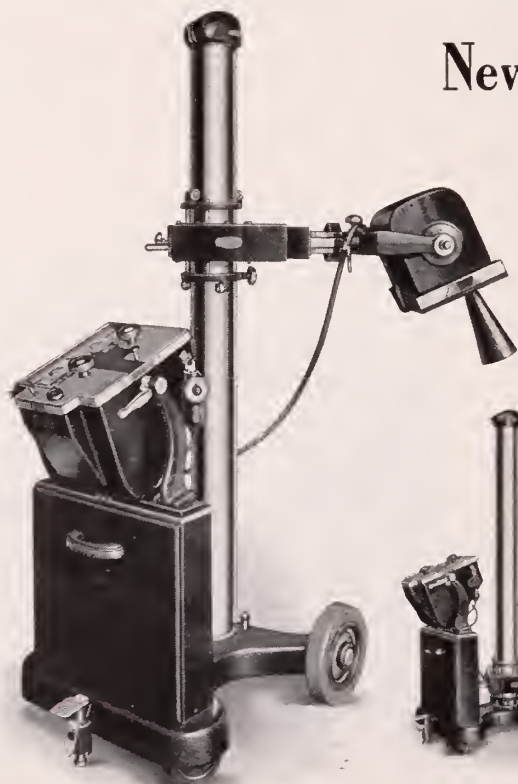
## BOOK NOTES

**VIRUS AND RICKETTSIAL DISEASES:** a symposium held at Harvard school of Public Health. June 12-June 17, 1939. Pp. 907, including index. Cloth. \$6.50. Cambridge, Mass. Harvard University Press. 1940.

This volume presents thirty-four papers presented at the Harvard Symposium of 1939. The data covered is not only a summary of the research done at the University, but is also a summary of the best information on the virus and rickettsial diseases. These are discussed first from the general viewpoint of epidemiology, properties, vectors and immunology of viruses. Then individual virus and rickettsial diseases are discussed in detail. Each paper presents a well rounded picture of the topic covered and is followed by an excellent bibliography. The volume places in one convenient place a wealth of information which would require considerable expenditure of time and effort to assemble from the literature. It is felt that it should excite the interest of bacteriologist, health officers, and physicians alike, especially those interested in the communicable diseases.

The format and typography of the book is excellent. There are 907 pages. However, there is no index but many of the papers are prefaced by a page reference outline. The volume can certainly

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be recommended highly to those interested in these important diseases.—*L. O. D.*

**BIOCHEMISTRY OF DISEASE**, by Meyer Bodansky, Ph. D., M. D., Director of John Sealy Memorial Laboratory and Professor of Pathological Chemistry, University of Texas School of Medicine and Oscar Bodansky, Ph. D., M. D., Lecturer in Biochemistry, Graduate Division, Brooklyn College; Formerly Biochemist, Childrens Medical Division, Bellevue Hospital, and Instructor, Department of Pediatrics, New York University College of Medicine; the MacMillan Company; 1940; New York; \$8.00.

The physician who fails to appreciate that biological chemistry is of practical value in nearly every day medicine is indeed out of date. A medical student has training in chemistry and bio-chem-

istry partly before he has even started on his medical course and certainly early in his medical course. For this reason he is not deeply impressed with the significance of such pure sciences and the amount he may use them in his every day practice of medicine in later years.

The Bodanskys have written this book with the idea that the physician may not have appreciated what he was taught, and further that there have been advances in the knowledge since most physicians have graduated, and physicians generally need a reference book on the subject and use of biochemistry in medicine.

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The book has 684 pages and is divided into 18 chapters. One can no more review the subject matter than he could review the subject matter of a history of the European War of 1914. In lieu of such review it may be well to refer to the titles of several of the chapters, such as, Diseases of the Blood, Heart, Respiratory Tract, Kidney and Urinary Tract, Digestive Tract, Liver and Biliary Tract, etc. Perhaps the two most interesting chapters are those on Disorders of Nutrition and Metabolism. These two chapters are worth the price of the book. They give one an insight on some unknown and puzzling problems which now and then confront them. To the physicians who are desirous of keeping up to date this book is highly recommended.—*D. F. H.*

HOT IRONS, HERALDRY OF THE RANGE; by Oren Arnold and John P. Hale. The MacMillan Company; New York; 1940.

When men raise cattle or have any sort of property which may easily get mixed up with that of several neighbors, which would ordinarily be indistinguishable one from the other, it is desirable to have some recognizable mark for the property of each owner.

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The book will have a wide appeal and probably a heavy sale if it reaps for the authors what it merits.—*D. F. H.*

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\*"Treatment of Acute Anterior Urethritis with Silver Picrate," Knight and Shelanski, AMERICAN JOURNAL OF SYPHILIS, GONORRHEA AND VENEREAL DISEASES, Vol. 23, No. 2, pages 201-206, March, 1939.

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VOL. XXIV

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No. 7

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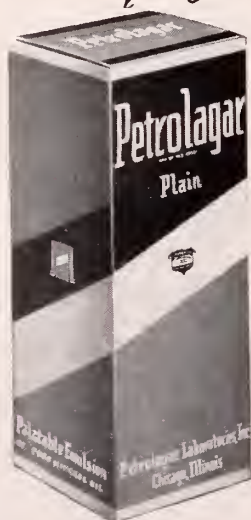
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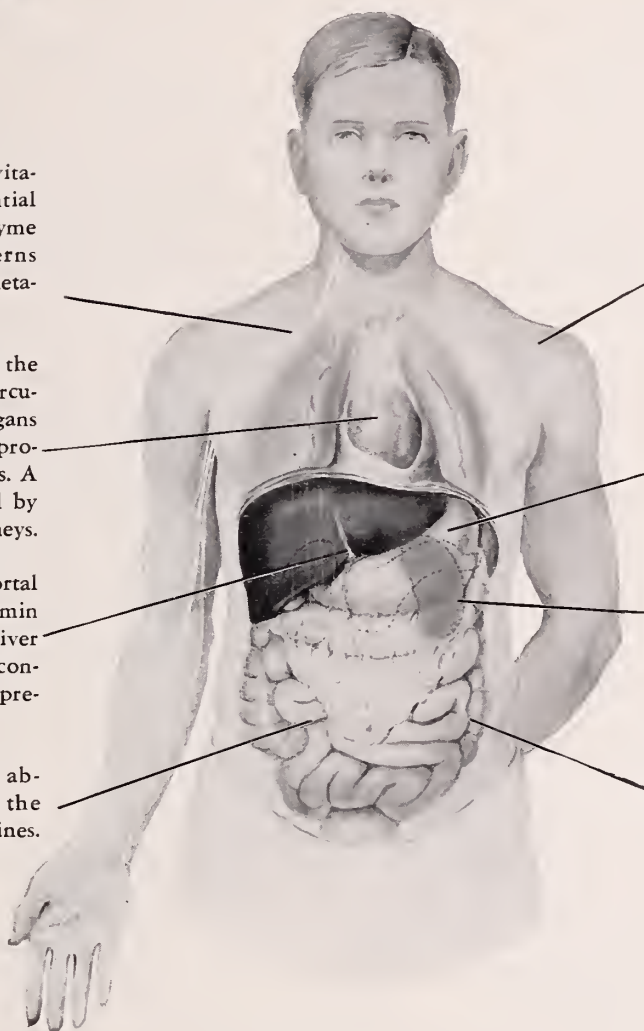
This page is the seventh of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A full color, two-page insert on the same subject appears in the June 22 issue of The Journal of the American Medical Association.

(4) In nerve tissue, vitamin B<sub>1</sub> is an essential component of an enzyme system which governs one phase of the metabolic process.

(3) The remainder of the vitamin enters the circulation, the various organs removing thiamin in proportion to their needs. A large amount is used by heart, liver, and kidneys.

(2) By way of the portal circulation the vitamin is carried to the liver which under normal conditions retains an appreciable amount.

(1) Vitamin B<sub>1</sub> is absorbed from both the large and small intestines.



(5) In skeletal muscle, vitamin B<sub>1</sub> also forms a part of an essential enzyme system governing a phase of the oxidative process.

(6) The secretory and motor function of the stomach may be affected by involvement of the gastric nervous mechanism as a result of B<sub>1</sub> deficiency. This may account for the anorexia in this condition.

(7) If excessive quantities of vitamin B<sub>1</sub> are ingested and absorbed, they are not stored for future use but are excreted by the kidneys; during periods of diuresis considerable quantities of the vitamin may be lost.

(8) Vitamin B<sub>1</sub> found in the feces is largely the result of bacterial growth. Coprophagy provides a source of B<sub>1</sub> for some species of animals.

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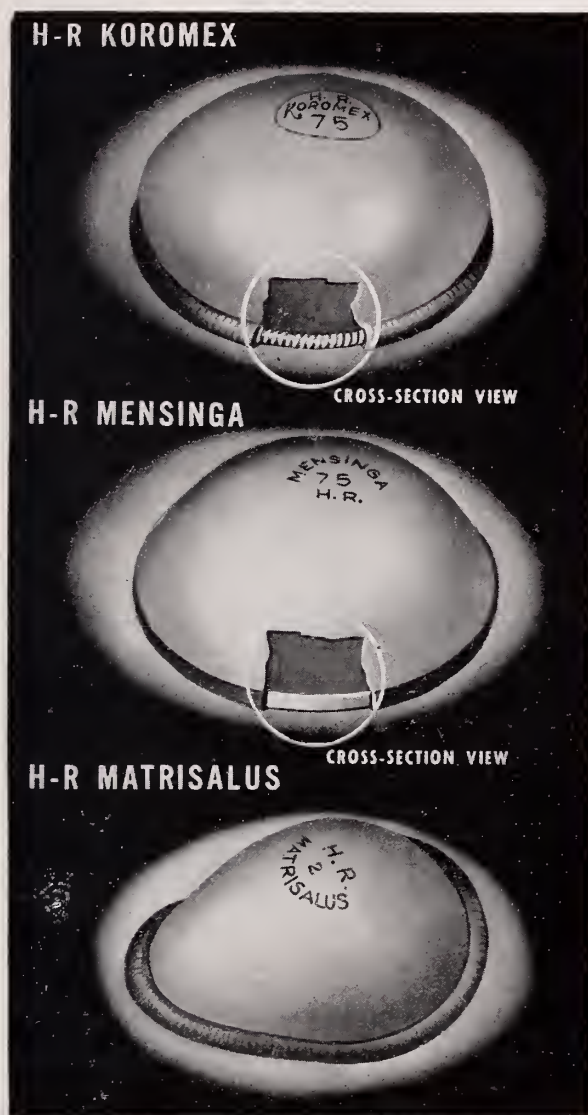
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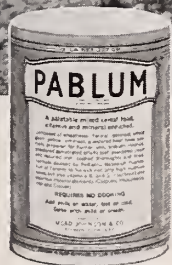


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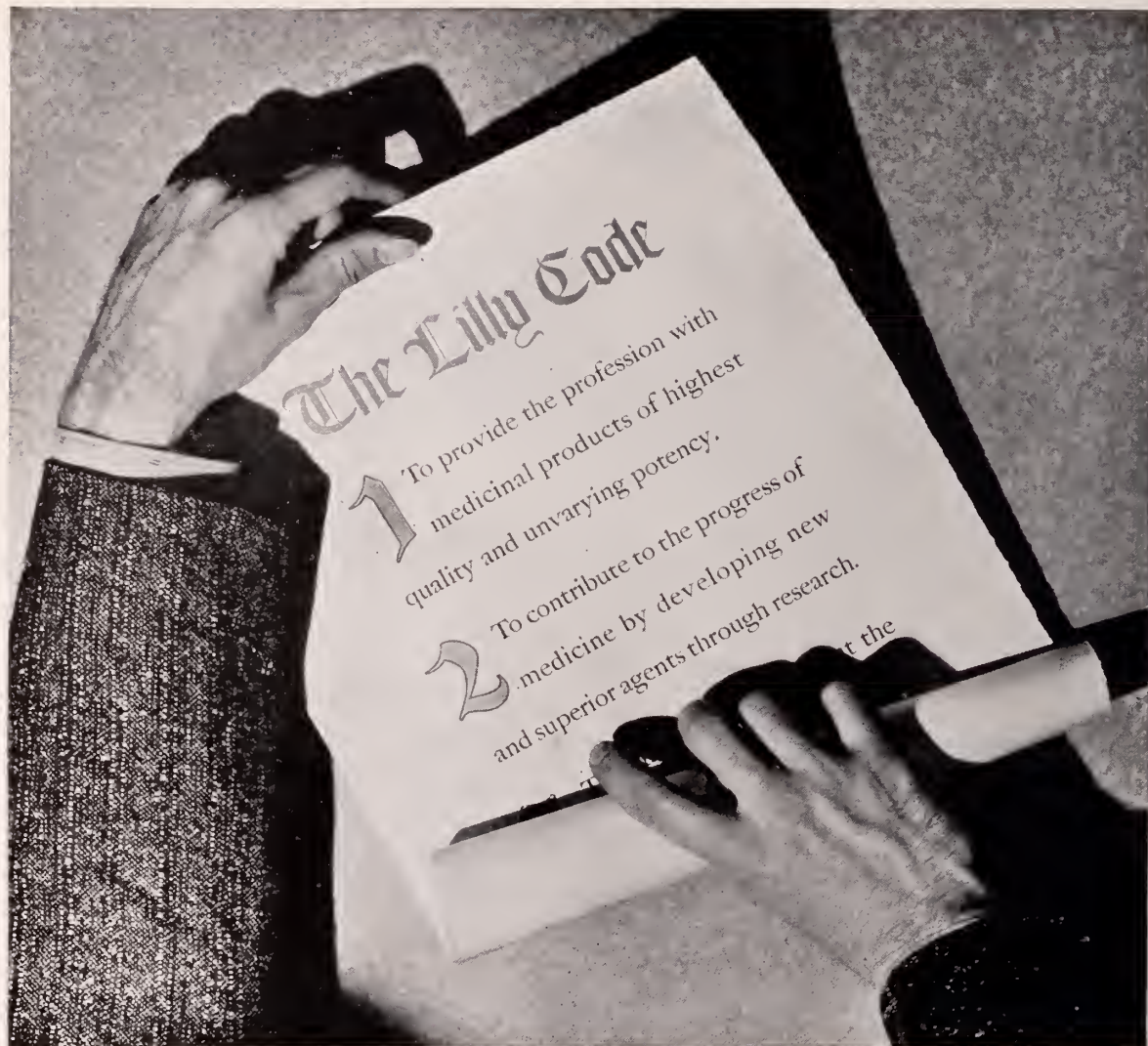


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VOL. XXIV

EL PASO, TEXAS, JULY, 1940

No. 7

## Protection of the Circulation in Surgery

WILLIAM S. MIDDLETON, M.D.

*Madison, Wisconsin*

THE protection of the circulation under any condition must have its roots in a knowledge of the physiology and the pathological physiology of the cardio-vascular system. Without an appreciation of the physiological requirements of the myocardium it is impossible to predict and to meet the exactions of the abnormal conditions attendant upon surgery. Without a physiological insight into the hemodynamics of the circulation, the peripheral vascular changes incident to surgery remain obscure. From these baselines all clinical approaches to the intricacies of the problem should logically begin.

The specialized portion of the vascular tube that is termed the heart has as its most important functional element the myocardium. Muscles demand oxygen, glucose and insulin for their proper metabolism. The myocardium has the interesting ability to maintain its glycogen reserve under the most adverse conditions. In glucose deprivation and starvation the myocardium is the last muscle to lose its glycogen. This store is preserved even under great physical effort, provided the supply of oxygen be maintained. Oxygen want leads to an early depletion of the glycogen store in the myocardium and to heart failure. Under ordinary conditions the endogenous sources of insulin are adequate for all purposes.<sup>1</sup>

In the clinical application of these physiological principles the diet through its carbohydrate content, conserving and replenishing the myocardial glycogen, may be expected to afford an ample source of energy. It is, therefore, wise to supply 250 to 300 grams of carbohydrate in the diet daily for two weeks before surgery, if possible, and thereafter to resume this level as early as feasible. The parenteral routes should be employed only in emergency and for the assurance of absorption. The strength of glucose solution, given intravenously, becomes an important clinical question when isotonicity is exceeded. A 5% solution of glucose is isotonic with the blood and concentrations above this level are rendered isotonic by drawing tissue fluid into the circulation. Thus, while hypertonic glucose solution actually affords a higher caloric value, its implied danger in overloading the circulation must not be minimized or overlooked. To

avoid this danger, of course, the glucose solutions should be given intravenously at speeds inversely proportional to their tonicity. Insulin may be required for its proper utilization. Oxygen atmospheres of 40 to 60 volumes per cent are logical adjuncts in the prophylaxis of myocardial failure pre- and post-operatively.

The anaesthetic agent should be carefully considered in the protection of the circulation. Inhalation anesthesia, especially with chloroform, has been indicted for circulatory collapse through myocardial depression. The growing evidence indicates faults in conduction as the basis for these results that may be very serious. Spinal and local anesthetic agents are not free from similar dangers.<sup>2</sup> Particular attention is directed to a singular hazard that attends spinal anesthesia. If the level of such an anesthesia reaches the intercostals, circulatory collapse may ensue.<sup>3</sup> Ephedrine offers protection against this danger. Nor should the antidotal action of the barbiturates be overlooked in the preparation for local anesthesia with cocaine or its derivatives.

In addition to intravascular forces many extra-vascular factors contribute to the normal circulation. Muscular effort is important in forcing the blood back toward the heart. The alternating respiratory phases materially assist in moving the blood into the thorax. Postural changes are added forces in the circulation. The surgeon must not overlook the patient and his circulatory problem in the interest of an esthetic or a mechanical result. Therefore, circumstances aside from the avoidance of hypostasis may well determine the encouragement of physical and respiratory activity in apparent compromise with the surgical dictum of absolute post-operative rest.

Nor is the problem of the protection of the circulation in surgery resolved in such general and simple terms. There are many deviations from the normal, both in the subject and in the reaction that require special consideration. If the patient suffers from a cardio-vascular handicap, the surgeon in conference with the internist and the general practitioner must be ready to answer whether the suggested operative procedure be one of expediency or of necessity. Clearly in the latter case surgery may be attempted in the face of apparently contraindicated cardio-vascular hazards; whereas if

Read before the Arizona State Medical Association, Tucson, April 18, 1940.

expediency be the indication, the consulting physicians may well counsel delay in the interest of the patient. Indeed, the decision may defer the surgical intervention indefinitely, if in the mature judgment of the consultants the cardio-vascular situation should carry a greater threat than the complicating condition for which surgery is indicated.<sup>4</sup>

### CLASSIFICATION

The classification of heart disease promulgated by the American Heart Association incorporates the important detail of functional capacity. Four grades of competency are included under this heading:

Grade 1. Patients capable of ordinary and unusual effort without symptoms referable to the circulatory system; no limitation of work and earning capacity. The vital capacity of these patients is in excess of 90 per cent of the predicted figure.

Grade 2. Patients capable of slight effort without circulatory symptoms but experiencing some difficulty upon unusual effort; no limitation of work and earning capacity. Their vital capacity ranges from 70 to 90 per cent of prediction.

Grade 3. Patients incapable of ordinary effort without circulatory embarrassment; definite limitation of work and earning capacity. In this group the vital capacity is between 40 and 70 per cent of prediction.

Grade 4. Patients experiencing circulatory distress at bed rest; no work or earning capacity. Their vital capacity level is below 40 per cent of prediction.

From this simple formula it is possible to give a reasonably accurate estimate of the patient's capacity to withstand the physical strain of major surgery. Indeed, the physical exactions of daily life exceed those of an operation under a *properly* administered general anesthetic.<sup>6</sup> So important is this detail that the choice of the anesthetist takes precedence over the election of the surgeon in the handicapped cardio-vascular subject.

In the last analysis the patient is a biological variable, and arbitrary rules are singularly inadequate. Never should such formulae as have been enunciated lull the clinician into a sense of false security on one hand or excite unjustified concern on the other. Cardio-vascular patients with functional capacities of Grades 1 and 2 should experience no difficulty from surgery. Those falling into Grades 3 and 4 may be expected to encounter much more serious circulatory reactions. Yet the most serious cardiac cripples may pass through protracted surgical procedures of the first magnitude without the slightest evidence of circulatory stress, while apparently slightly handicapped subjects at times respond to lesser surgical burdens by symptoms of grave circulatory collapse.

### CARDIAC LESIONS

The protection of the patient with a known cardiac lesion against the strains of surgery of expediency or of necessity involves the same principles of therapy. The time factor in marshalling the forces of protection alone differs. Rest should be invoked to build the reserve of the myocardium. The criteria of the limitations of physical effort are within the bounds that avoid breathlessness, cardiac consciousness and fatigue. The occurrence of these symptoms implies a trespass upon the myocardial reserve. On the other hand, in the pre-

and post-operative course of this cardiac subject rest must not be carried to such extremes as to produce hypostasis. In fact, experience would indicate that in some patients a certain physical demand upon the myocardium is at times necessary to improve its tone and the circulatory efficiency. Mild sedatives are valuable adjuvants in a rest program. The diet must contain the essential food stuffs. Carbohydrates are especially important as the readily available energy source for the myocardium. Proteins and vitamin B<sub>1</sub> must be afforded to supply tissue needs. Oxygen may be given pre-operatively; but in most instances its adequate supply during anesthesia and in post-operative convalescence will give the desired protection. Amino-phyllin (1½ grains three to four times a day) may be useful in the patient with coronary sclerosis. Digitalis has an established position in the prophylaxis against heart failure. Its use should not be routine in all cardiac patients submitted to surgery. Frank decompensation will be vigorously met by appropriate doses of digitalis. Quinidine should be reserved for the control of paroxysmal tachycardia and auricular fibrillation (in the absence of cardiac decompensation, thrombosis or embolism, long duration of the latter arrhythmia, marked sclerosis or valvulitis, and cinchonism). Its rapid action and elimination indicate the necessity for short intervals of administration.

### THYROTOXICOSIS

The patient with thyrotoxicosis requires special attention in the preparation for and the recovery from surgery. The protection of the myocardium dictates the peculiar requirements of this patient for glucose and oxygen (and perhaps insulin) in addition to the usual iodine-sedative-rest-high caloric diet preparatory course. Paroxysmal auricular fibrillation is particularly responsive to quinidine. It is wise to remove this handicap pre-operatively, although some argue that surgery will promptly resolve the arrhythmia. Where such is not the case, the patient usually has a stormy post-operative period. A logical schedule for the administration of quinidine sulfate follows: A trial period of four doses of 2 grains each at 2-hourly intervals. If no adverse symptoms develop, the individual dose is increased to 4 grains. This dosage is continued at 2-hourly interval *day and night* for 36 hours or until the rhythm returns to normal (if before this time). If no advantage is obtained in this period, no further continuance will avail. The maintenance dosage is fixed by gradual withdrawal. The individual dose is first reduced and then the interval steadily lengthened. The more fortunate patients may be able to get along without quinidine. Others require a certain amount over an indefinite period of time. The tachycardia of thyrotoxicosis is an inviting therapeutic target; but experience has shown that it responds very poorly to digitalis. Indeed, digitalis may lead to serious difficulties in limiting the minute volume output of the heart by reducing its size as it decreases its



rate.<sup>7</sup> Thevetin, on the other hand, appears to have an almost specific indication in this situation.<sup>8</sup>

Special problems are presented in cardio-vascular patients with gout, nephritis, diabetes, chronic gall bladder disease and urinary tract obstruction confronted with surgery. However, the sound physiological principles already outlined apply with particular force under these complicated conditions. Surgery in such patients presupposes as complete control of the underlying condition as circumstances permit.

### SHOCK

Surgical shock has been reduced to its last common denominator on the basis of a decrease in the effective circulatory volume.<sup>9</sup> Many circumstances contribute to this condition. Trauma, blood loss, fluid loss, pain, acidosis and exposure are etiological factors. Recent studies<sup>10</sup> indicate that blood concentration anticipates the significant fall in arterial blood pressure. Hematocrit, hemoglobin and blood specific gravity determinations assume new values as indices of impending danger. Electrolyte disturbances have found expression in the suggestion of a potassium imbalance in shock.<sup>11</sup> The control of shock involves a close coordination of many factors. In response to a question relative to the prophylaxis of traumatic shock in France (1918) Professor Cannon said, "If I were expecting to be shot, I should like to have an ample bodily store of carbohydrates and fluids. I would then take morphine, alkalies and more fluids. I would like to have assured body warmth to avoid temperature loss and early hemostasis to obviate blood loss." This statement covers most of the requirements of the case except the restoration of blood and fluid loss through transfusions or infusions. The prophylactic and therapeutic utility of adrenal cortical hormone depends upon the restoration of the potassium-sodium equilibrium, and, in turn, a proper fluid balance.<sup>11</sup>

### EMBOLISM

Post-operative thrombosis and embolism are very important surgical problems. The long period of inactivity incident to operative procedure, coupled with trauma and infection, prepare the field for thrombosis. Tissue respect, earlier mobilization of the extremities and thyroidea sicca offer some measure of protection against thrombosis. The same

avoidance of manipulation and trauma in sites of possible or known thrombosis will reduce the incidence of remote embolism. The recent revival of the interest in heparin<sup>12</sup> for prophylaxis against thrombosis or against the propagation of the same affords a potent, but involved, weapon. The careful check of the clotting time of the blood requires the continued attention of a trained technician, if not a physician. (The clotting time must not be permitted to fall below 12 to 15 minutes.)

### COMMENT

Through this consideration of the protection of the circulation in surgery runs the thread of the preservation or the restoration of the physiologic balance in the most complete degree possible. In affording the patient every possible support the surgeon is in no sense released from his moral pledge to minimize trauma and to respect tissues. The circulatory organs suffer from blood loss and shock as do the remaining organs of the body. It, therefore, behooves us to prevent, or, failing of this ideal, to treat shock as expeditiously as possible. The duration of the surgical procedure bears a direct relation to the incidence of circulatory complications. This circumstance will spur the lagging surgeon to higher efficiency. By the terms of protection the avoidance of circulatory complications offers a far worthier objective than their treatment.

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## Eye Conditions of Interest to the General Physician

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IT IS quite beyond the realms of human possibilities for a general physician to be able to properly diagnose and treat all eye infections and at the same time be expected to keep up with all the new

phases of diagnosis and treatment in general diseases that are continually being brought out in this rapidly changing medical age.

What, then, is to be expected of the general practitioner concerning the diagnosis and treatment of eye diseases? Some physicians flatly refuse to even

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attempt a diagnosis or treatment of eye affections, while others go to the other extreme and attempt to treat all eye affections. This should be regulated by the locality in which the physician is practicing. If in a large city, where eye specialists are available, then most all patients with eye diseases should be sent to the specialist, but, on the other hand, if there is no specialist to be had without sending the patient a long distance, then the physician should attempt to diagnose and treat the more common eye disease.

Unfortunately, the laity is not as yet well in-

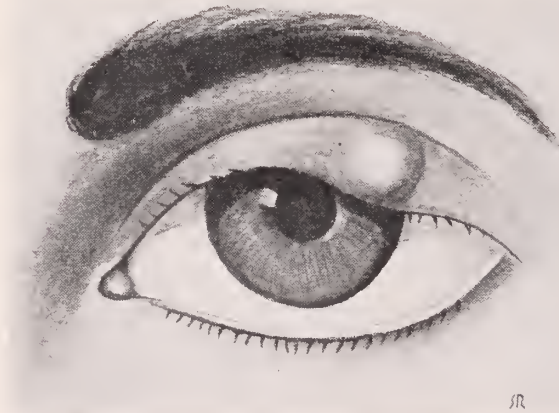


FIG. 1. CHALAZION

The chalazion is a cystic formation originating in one of the meibomian glands. It is slow in forming and usually causes no pain or discomfort.

Treatment: In early stage, gentle massage may abort the chalazion, but later, after it is well formed, it should be opened and the walls curetted away.

formed on certain eye problems of great importance, but we, as eye specialists, must forgive them for this shortcoming, inasmuch as we are at fault for not having, long ago, informed them through publications, in lay journals and periodicals and through lectures on public platforms of these most vital problems.

The most unfortunate circumstance of all is that many physicians are not yet properly informed on these self-same problems, and inasmuch as most patients go to the family physician for all information concerning health, it is, indeed, sad to relate that there are some few physicians who must need fall short in their information to the inquiring patient.

In the general consideration of the eye, it must be remembered that it is only one of the many organs that together constitute the great human system, and that many conditions or diseases affecting these united organs are in a measure mirrored in the eye, and while eye changes are not always of a nature to be detected, there are, however, changes in the eyes which become cardinal diagnostic signs in certain body affections and are of paramount value in the final diagnosis of that disease. For example: Choked disc in brain tumor, and the Argyle Robertson pupil, an early sign in *tabes dorsalis*. Besides, the importance of know-

ing the diagnostic value of certain eye conditions, there is value in the knowledge of the signs and symptoms of the severer as well as the minor types of eye affection.

In an attempt to present this subject in a brief and understandable manner it is necessary for me to break away from the conventional text book type of description and use, in a few instances, "short cuts" or changes in the common classification. This subject is so large that only those conditions which are most common, and some of the less common diseases and conditions of diagnostic value in general diseases will be discussed.

**Lid Affections:** Swelling of the lids often indicate some local affections and may also be a symptom of heart disease, nephritis, or due to an error of refraction.

**The Conjunctiva:** Swelling and congestion of the conjunctiva may be a sign of over-eating or alcoholism. It is present in hay fever, and may be allergic. It is often a symptom of errors of refraction or muscular imbalance.

**Cornea:** The cornea does not often show signs of general affections; however, a few instances are worth mentioning. Phlyctenular keratitis and conjunctivitis is indicative of constitutional errors. It occurs in debilitated and tuberculus patients, and in the so-called scrofula diathesis.

Interstitial or parenchymatous keratitis is usually a sign of inherited syphilis.

**Iris:** Inflammation of the iris is often the result of focal infections such as abscessed teeth, infected tonsils and sinuses, gonorrheal urethritis and general infections as tuberculosis and syphilis.

**Pupil:** Much diagnostic information may be had by a careful examination of the pupils. While it is assumed that the diagnostic value of certain anomalies of the pupillary action is common knowledge to the general physician, it is thought that a

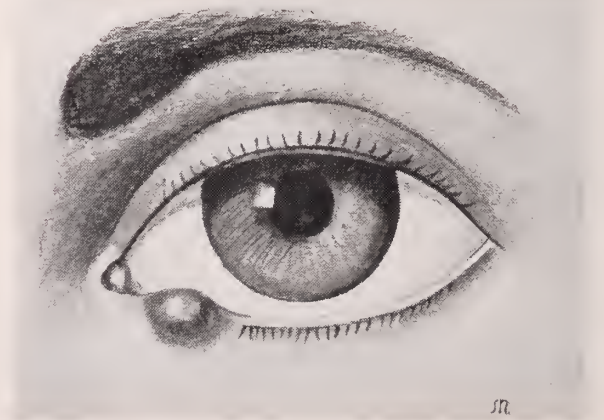


FIG. 2. HORDIOLUM

A localized infection of the gland of Zeis is due to eye strain, anemia, lowered state of health, and is associated with blepharitis. More common in children and young adults, but may occur at any age.

Treatment: In the early stage a sty may be aborted by removing the eye lash afflicted and applying hot applications. In the later stage, after the infection has been localized, incision and free drainage is the proper treatment.



short review of the pupillary reactions may be of value. The more common normal reactions of the pupils are that they are contracted in bright light, and dilated in subdued light. They also contract during the act of accommodation. When a light beam is directed into one eye the pupil will contract; also the pupil of the other eye will contract simultaneous with the lighted pupil (consensual reaction).

Another interesting phenomenon is that while the pupils contract as the retina is stimulated by light, the pupils will dilate if the tactile sense is stimulated, as pinching the skin. Also, the pupils contract when the optic axis converge in accommodation.

The two pupils are equal in size. It is quite rare to see unequal pupils in a normal person. The size of the pupils vary much in different people under the same conditions of illumination. The pupils are larger in youth than in old age. They are usually smaller in hypermetropia (far-sighted persons) than in the myopia (near-sighted persons). The normal size of the pupil may be said to be the result of the two reflexes spoken of above, the contraction to light and the dilatation to sensory stimulation.

Absence or changes in the above described reactions of the pupil are usually signs of diseases of the central nervous system. If the pupils do not contract when light is directed into them, but contract during the act of accommodation (Argyle Robertson pupil), degenerative diseases of the central nervous system is usually present, this being an early symptom of tabes dorsalis, and is present in about 70% of cases. It is also present in 50% of cases of general paralysis of the insane.

Contracted pupil may be due to the use of drugs (eserin, pilacorpin, etc.). It may also be due to bright light, cutaneous pain, iritis accommodation, paralysis of cervical sympathetic, etc.

Fixed or immovable pupils are the result of posterior synechia, iritis, absolute glaucoma, complete optic atrophy, atropine, etc.

Dilated active pupil may be due to glaucoma simplex, myopia, partial optic nerve atrophy, drugs (cocain, adrenalin, etc.), partial third nerve paralysis, certain types of blindness.

Inequality of pupil may be monocular synechia, syringomyelia, general paragnosis of insane.

Irregularity of pupil, partial posterior synechia, senile atrophy of iris, general paralysis of insane and injury.

*Nystagmus* is a rapid oscillatory movement of the eyes. It may be congenital or infantile, and acquired. The former is due to congenitally malformed eyes, also eyes which have developed early opacities of the media. It is present in albinism, macular changes and some cases of total color-blindness.

Acquired nystagmus in adults is formed as a symptom of disseminated sclerosis, cerebellar disease, diseases of the vestibular tracts and semi-circular canals. If the movements are horizontal

and are seen only during extreme lateral rotations, it is indicative of the early stages of disseminated sclerosis, nystagmus movements of long excursions occur in cerebellar irritative lesions and are directed towards the side of the lesion. There is in

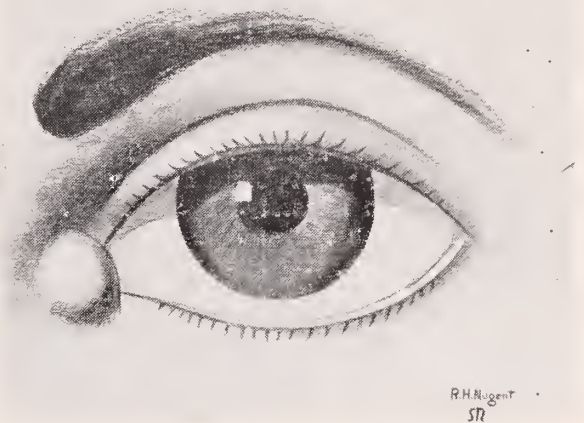


FIG. 3. DACRYOCYSTITIS

Chronic inflammation in the lacrimal sac is often present for months and years. It is usually due to a stoppage of the nasal duct.

Treatment: Consists of probing, syringing and removal of the sac or one of the other operations devised for its relief.

adults, also, an occupation neurosis, appearing in the form of nystagmus, as is seen in coal miners.

In congenital nystagmus, the patient is not aware of the movements, and the vision is usually defective. While in acquired adult nystagmus, the movements of the eyes often cause objects to appear to move and the vision may be normal.

*Ophthalmoplegia*: If only a single muscle is paralyzed, it is usually the external rectus (sixth nerve paralysis) or the superior oblique (fourth nerve paralysis); if several muscles are affected at the same time it is indicative of third nerve paralysis. In case of paralysis of an ocular muscle there is usually diplopia or double vision. And in order to overcome the existing diplopia the patient usually turns the head so that the face is rotated toward the direction of action of the paralyzed muscle. "Ocular torticollis" is a term used to describe the turning of the head to compensate defective action due to the inactivity of one eye. It is a simple tilting of the head which contrasts it from true torticollis, in which tilting the head involves the rotation of the chin towards the opposite shoulder and a marked contraction of the sterno-cleido-mastoid muscle, is present.

Paralysis of ocular muscles are not of so great a diagnostic value as it may at first seem, as the nerve lesion may be situated most any place along the nerve tract from the cortex of the cerebrum to the muscle. Therefore, the lesion may be intra-cranial or intra-orbital.

The most common cause of ocular paralysis is syphilis, due to toxic swelling or gummatous growths most any place along the nerve trunk, other causes may be intra-cranial, such as hemorrhage,

thrombosis, or pressure due to tumors or periorbitis.

Total ophthalmoplegia may be an early sign of encephalitis lethargica.

*Synkinesis* is an involuntary or reflex movement of a paralyzed part excited by a corresponding movement in a non-paralyzed part. Following are some diagnostic examples of synkinesis in the eyes.

Normally, when the eyes are turned upward the action is accomplished by the levator palpebrarum,

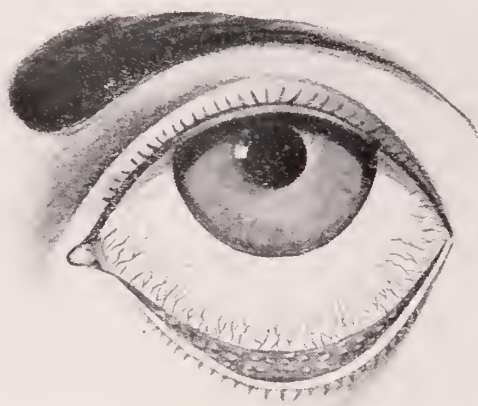


FIG. 4 INJECTION OF CONJUNCTIVAL VESSELS

Note that the vessels usually begin swelling at the periphery in or near the fornix and as the inflammation increases, the engorgement advances towards the cornea.

and in extreme upward rotation the frontalis is involved; pathologically, in congenital ptosis, the upward movement of the eyes is often defective. Normally, on looking down, the upper lid follows the globe; pathologically, in exophthalmic goiter, the lids do not follow the globe closely or not at all. This is known as Von Graefe's sign. In total facial paralysis the eye cannot be closed voluntarily; the lid, however will follow the globe on looking down; further, the eye will close during the action of other facial muscles, as in the act of laughing.

*Asthenopia* is a fatigue of the muscles of the eye which is attended by pain, headache and general discomfort. It is due to certain errors of refraction or muscular imbalance, and is corrected only by properly fitted lenses, muscle training, or the correction of existing constitutional disturbances.

*Strabismus*, or so-called "crossed eyes," is a condition which is far more serious than is generally believed by the average lay person. Usually only one eye is used for all visual purposes, while the other, being turned either "in" or "out," soon develops a condition known as suppression of vision. It, therefore, is not properly developed from a physiological standpoint, and the usual result is very poor vision in the crossed eyes. This incapacitates the individual to a greater or less degree and renders him unable to pass a visual test usually given by larger companies to the applicant for employment.

A word of warning here, therefore, is in order. These cases should be directed to an oculist just as soon as it has been discovered that a crossed eye exists, for in a very large percentage of cases the eye can be straightened and vision preserved in the crossed eye, by wearing properly fitted blasses, orthoptic training, and in some cases surgery. Early treatment will give a greater percentage of corrections with good vision and without the necessity of resorting to surgery.

The correction of strabismus by surgery is successful from a cosmetic standpoint in almost every case in which proper surgical methods and technique are used, but in a large percentage of these cases orthoptic training will be necessary to induce binocular co-ordination and bilateral single vision.

*Myopia*, or nearsightedness, is an error of refraction which is indicated by the absence of normal distant vision, but the patient may have normal vision for close work. It is easily corrected with properly fitted lenses, so that the patient can see far and near in the normal manner, but the fitting of lenses is not all that is necessary for the good of the patient's eyes. The patient who is usually quite young and attending school should be carefully examined for existing pathology and should be put in a perfect physical condition, if possible, for if allowed to go untreated a large percentage of myopia cases will progress and gradually become more marked. It is well to keep in mind that all school children suffering with errors of refraction should be carefully and properly refracted by a physician and properly fitted lenses prescribed and the patient instructed in the physiology of vision.

While we are discussing this subject a word about who should attend to the examination of the eyes is proper. It is apparent that many laymen and some physicians do not seem to appreciate the different services which can be rendered by an oculist and an optometrist. If the patient is referred to an oculist for his eye examination he will

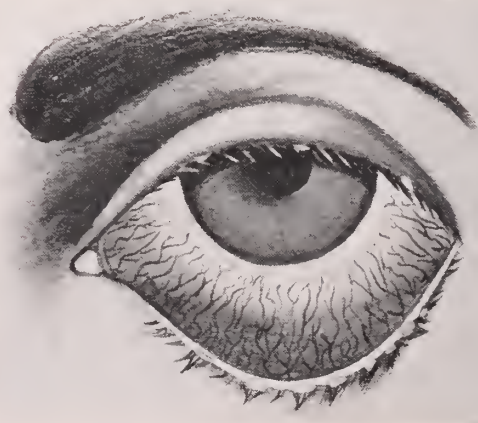


FIG. 5. ACUTE CATARRHAL CONJUNCTIVITIS

There is marked congestion in the fornix and on the palpebral conjunctiva. The Bulbar conjunctiva is not congested in the earlier stages or in the less severe types, but in the more severe infection the bulbar conjunctiva is congested as well. There is a muco-purulent discharge and much watering of the eyes. The prognosis is favorable.



be examined for existing pathological conditions, and if such be found the patient can be treated by the oculist, or if the pathology is present elsewhere in the body the patient can be returned to the physician for further examination and treatment. Whereas, if the patient is sent to a non-medical man, pathological conditions will be overlooked and the patient will be neglected and left to suffer for want of proper medical or surgical care.

In this day of advanced learning and greater exactness in living and personal hygiene, it is not in keeping with good procedure to treat patients in a shiftless or incompetent manner; therefore, specialists are of a necessity in some branches of medicine and surgery, and it so happens that the treatment of eye diseases and affections should be administered by the highest and best trained physicians and not by non-medical, so-called eyesight specialists.

Never before in the history of the human race has so much been expected of the eyes. Most of our newest and greatest inventions are intended to place more work on the human eye. The auto, the cinema, the increasing countless numbers of books, the voluminous array of periodicals now on the market, the great daily newspapers, also the artists and photographers add more work for the eye. The radio and telephone, being the only ones intended for the ear, are now having television added to furnish still more work for the eye.

Not only have we the added strain due to this great increase in ocular duty, but other complica-

sult. Naturally, the eyes receive their share of the damage.

The proper use of an organ is its proper care; disuse invites decay. Misuse and abuse are unpar-



FIG. 7. CILIARY INJECTION

This is a net work of small vessels from the ciliary system and is immediately surrounding the cornea. It indicates inflammation of the iris, ciliary body and corneal stroma.

donable sins against the laws of hygiene. With reasonable care the eyes will do as much work or perhaps more than any other organ in the human system. But one cannot care for the eyes alone, for it calls for proper general body care and proper hygiene. If this is properly attended to, the eye problems will be very simple.

*The Ophthalmoscope:* Every physician, no matter what branch of medical practice he follows, should know how to use an ophthalmoscope. Space here does not permit a full treatise on the diagnostic information obtainable from a fundus examination. The choked disc of brain tumor, papilledema or papalitis of pressure or toxic origin; the exudative iritis of renal disease, commonly termed albuminuric retinitis; embolism of the central retinal artery due to mitral stenosis; choroditis due to syphilis; retinitis due to diabetes; hemorrhage of the retina occurring in most all forms of retinitis, and many other conditions of the retina are of valuable diagnostic value.

#### FIELD OF VISION

A record of the field of vision or what is commonly called the form field is of great diagnostic importance. In order to secure an accurate field, it is necessary to use a perimeter, and that the operator have some knowledge of the technic of taking the field. Scotometry is accomplished by using the tangent screen or the campimeter, giving records of greater diagnostic importance.

Any doctor who has a normal field of vision can get a good record of a patient's field of vision without the use of any of the above instruments. All he needs is a white card about 5 mm. square fastened to the end of an applicator with a piece of adhesive tape. Then, sitting 2 feet away facing his patient, with the patient's left eye and the doctor's

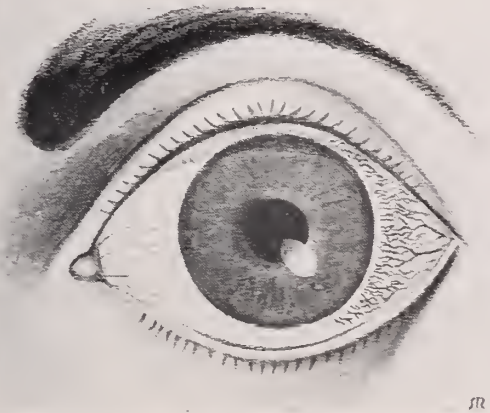


FIG. 6. SIMPLE CORNEAL ULCER

This is a common type of corneal affection. It is caused by trauma to the cornea, from the breaking down of phlyctenules, conjunctival inflammations, disturbed nutrition to cornea, etc. The simple ulcer usually heals without much delay; other ulcers, especially in the aged, are very resistant to treatment.

tions have arisen. We have become a race of "sitters." We sit in our autos; we sit while we work; we sit at the radio; we sit in the "movies"; we get very little exercise; our daily walk is usually from the front door to the curb where our auto waits us. We eat too much. We overload our system with foodstuffs and because we are not active our organs become inert, and improper functioning is the re-

right eye occluded, he asks the patient to look into his left eye. While the eyes are thus fixed, the improvised target, consisting of the white card, is held out far to the doctor's right, and slowly advanced to a point half way between the doctor's and the patient's eye. The patient is instructed to tell the doctor the instant he sees the white card. This procedure is repeated in about eight meridians

as soon as they are discovered, so that the patient may be guided by the oculist's advice.

In recent years much research work has been done in the method and manner of removing cataracts. This is classified into the extra-capsular and the intra-capsular methods. The former, known as the "classical" method, consists of the dividing of the capsule of the crystalline lens and expressing or washing out the lens contents. This is the older method. The later method consists of removal of the lens in toto, in which case the so-called "after cataract" is impossible. This is the newer method, and requires more experience to perform it correctly, and on the whole gives better results in the hands of those who have had experience with both methods.

#### INDICATIONS FOR HOT AND COLD APPLIED TO THE EYE

It is common knowledge that metabolism is best maintained at normal body temperature; is accelerated by the use of heat and retarded by the application of cold.

The comparative action of heat and cold on the eye makes it imperative that heat be used in all cases where metabolism is to be kept at its best—and that applies to all eye affections, with but few exceptions.

When cold applications are used on the eyes, it is usually a case of choosing the lesser of two evils. For example, in case of injury, cold compresses can be used to prevent blood extravasation into the tissues, and then they should be used only for a short time, or until the danger of bleeding has passed. In this case, therefore, the damage done to the cornea and other delicate structures would not be so great as that which might result from the hemorrhage.

In brief, hot applications are best used in all eye affections, with the exception of injuries where there is no laceration of the skin and there is danger of discoloration due to extravasation of blood or of swelling due to lymph stasis in the injured parts, in which case it is more beneficial to use cold applications for the first few hours, then heat from that time until the parts have returned to normal.

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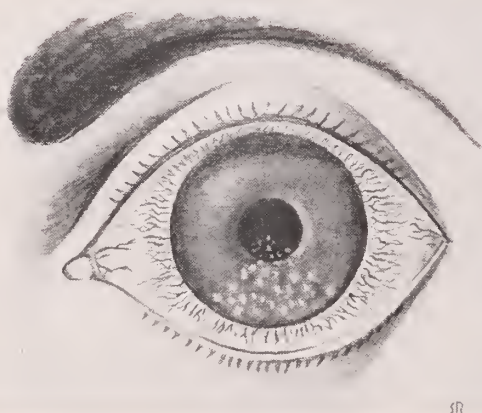


FIG. 8. SEROUS IRIDOCYCLITIS

Characteristic of intraocular inflammation, there is here shown a heavy circumcorneal injection. Added to the picture, is the not uncommon leucocytic deposits on the posterior surface of the cornea, the result of inflammation of the ciliary body. Iridocyclitis is usually the result of focal or general infection.

surrounding the eye. If the patient sees the card at about the same time the doctor sees it, it can be assumed that the patient's field of vision is normal.

#### CATARACT

Cataract is an opacity of some part or all of the crystalline lens. Babies are sometimes born with cataracts (congenital cataracts), but most often cataracts appear after birth (infantile cataracts). These are most often soft cataracts and should be removed. Cataracts are sometimes present in early adult life; in fact, they can come on at any age. The most common form of cataract is that type which comes on in patients past middle life, called senile cataract. There is, also, the traumatic cataract, which is due to injury.

All cataract patients should be sent to an oculist

## Refraction and Muscle Balance in Aviation

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THE ever increasing complexity of the unnatural task of piloting a heavier than air mechanism demands a good deal more of its practitioners than a good sense of "balance in the pants" Good, balanced vision is of primary importance. With the constant advances in night and instrument flying there must be a ready dark adaptability. Of this function Ferree and Rand say<sup>1</sup> "The night flyer

needs especially the power to change his vision quickly from the illuminated cock-pit and instrument panel to the outside world and back again. Normal, or better than normal sensitivity in light adaptation, is, of course, also important." So, mere good vision, as the term is generally understood, is not enough to require of the pilot. It is imperative that a pilot's eyes must do these services for him:



(1) See things at a distance, (2) judge how far away they are, (3) see nearby objects, such as his instrument panel.<sup>2</sup> In order to establish the fitness of the eyes to perform these services certain valuable tests have been devised. The eyes of the prospective pilot must measure up to a minimum standard, now well established by long experience. Unless these standards are met, the pilot is a potential source of danger to himself, his fellows, and to valuable equipment.

### REFRACTION

It was established long ago that a majority of accidents was due to man or pilot failure rather than to machine failure. Further investigation showed that many cases of pilot failure could be traced to sub-standard visual acuity. It was a logical step on the part of the armed services to prescribe a complete refraction of the eyes, under cycloplegia. Perhaps the most important part of the present required examination of prospective pilots is the refraction. The records of March Field (U. S. Army), in a recent study of 500 rejected applicants<sup>3</sup>, show that 62.2% of the cases rejected were disqualified because of eye defects. More than one-half of this group were rejected because of errors of refraction. Gore and Lawton<sup>4</sup>, in a report of 575 examinees rejected at Maxwell Field (U. S. Army), found a high percentage of disqualifying errors of refraction. One hundred and ninety-three candidates were eliminated because of poor vision. Brown states<sup>5</sup>, from 19 years experience in the U. S. Army Air Corps, "that more candidates are disqualified for poor visual acuity than any other reason; next, ocular muscle imbalance and defective depth perception; many for Cardio-vascular instability; neuropsychic examination; and finally flying adaptability test." Ocular requirements do not demand supermen, arbitrary though the standards may appear. These requirements are based on the minimum limits judged by ophthalmologists to be compatible with safety. True, one famous aviator became very proficient in his flying, using but one eye. But he was one among a million. Which is to say that trouble is almost sure to follow if a pilot with sub-standard ocular equipment is allowed to fly. The standards for Naval Aviators are somewhat higher than those of Department of Commerce licensees. Ickstadt<sup>6</sup> says "In the Navy, in passing a candidate for aviation training, not only his present physical findings must be considered, but also the probable length of time they will remain within qualifying limits. Because of the exhaustiveness of the course and the cost thereof, it is not sufficient for the graduate to remain fit for one or two years. He must maintain his efficiency for 10 or 12 years to make the investment a paying proposition to the Government. Hence it is evident that our present standards were devised, not particularly for the purpose of deciding who should be able to learn to fly, but rather with an eye to the probable length of a pilot's usefulness in military flying."

In the Navy an examinee is disqualified if he

cannot read 20/20 without more than one diopter of correction, either hyperopic, myopic or astigmatic<sup>7</sup>. Flying, especially at high altitude, places a high degree of strain on the physique of the pilot. The eyes are in constant hard use, with an accompanying knowledge on the part of the pilot that his very life may depend on their perfect response and behavior at all times when it is in the air. Fatigue of the entire body as well as the eyes may build up rapidly. As Chase<sup>8</sup> has said: "An eye with latent hyperopia (of more than one diopter) will quickly tire and fail to see maps and instruments correctly, especially since accommodation is greatly diminished in the low oxygen of high altitude, and because the effort to focus the ray of light on the retina is apt to induce a tonic action of the Ciliary muscle of accommodation, as well as the internal recti muscles which turn the eyes in when viewing objects at close range. This tonic action produces errors of distance judgment and leads to crashes in landings."

The flight surgeon is well aware of the reasons for the ocular standards as now prescribed for the applicant for flying training. Certainly part of his duty must be to thoroughly and sympathetically explain these reasons to the candidate who may question, and to other interested parties who may criticize and even at times, quarrel with the standards prescribed.

### MUSCLE BALANCE

Coordinated functioning of the eyes is nearly as important to the Aviator as visual acuity. According to Wilmer<sup>9</sup> "otherwise there is a progressive loss of muscle tone as the pilot ascends, resulting in a restricted field of binocular fixation, double vision, and loss of accommodation. Under such conditions there would be difficulty in perceiving and placing an enemy machine and in seeing accurately the barograph, air speed indicator, revolution counter, compass, inclinometer, drift meter and the numerous other instruments under the eye during flight." The flyer with esophoria may judge the ground to be farther away than it really is. He is apt to crash by running the nose of the plane into the ground. The pilot with exophoria may level his plane too soon on attempting to land. He thinks the ground is closer than it really is. The plane may stall and crash. Hyperphoria leads to very serious errors in judgment of distance. The pilot with a heterophoria of any type may at one time be too high in his landing approaches, and at another time be too low. He may do this by over compensating for the previous error.

Tests for heterophoria as now used in the Navy are (1) Maddox-rod Screen tests at 6 meters, (2) Maddox-rod Screen test at 33 centimeters (3) prism divergence, (4) test of associated parallel movements, (5) depth perception at 6 meters.

The amount or degree of heterophoria may vary in the same individual rather widely. This variance depends in great part of fatigue. Therefore, the pilot with even a slight amount of heterophoria on the ground may well acquire a danger-

ously high degree of ocular imbalance when in the air and under a considerable amount of fatigue. Thus this flyer may make unsteady landings, may crash.

### COMMENT

Good visual acuity is perhaps the most valuable single asset an aviator may have. The flight surgeon must understandingly and strictly apply the prescribed tests in order to determine the presence or lack of normal visual acuity in the candidate for flying. Good balance of the extra-ocular muscles is nearly as necessary to the flyer as normal vision. The flight surgeon must accept much of the responsibility in the selection of aviation trainees and in their care after graduation. He must be thoroughly aware of the physical standards demanded of the pilots, and must strictly apply them. In so doing he discharges a high duty to the individual, his fellows, and the Gov-

ernment. Without the flight surgeon's intelligent cooperation, the art of flying could hardly be highly developed as it is today.

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## Pathology of Lymphoblastoma

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THE term "lymphoblastoma" is used in a generic sense to name a group of conditions which have in common the property of being neoplastic proliferations of lymphocytes. There are several distinct species of tumors in this genus which will be described.

These tumors are as difficult to diagnose and classify as any other group of conditions with which the pathologist has to deal. He encounters difficulties in diagnosis for several reasons, the most important of which is that he is often presented with totally inadequate material for study. An intact non-traumatized lymphnode is essential. Prompt and proper fixation of the tissue are equally important and the microscopic sections must be of high quality to permit an adequate study. A second difficulty is due to inadequate information furnished him concerning the clinical course of the disease. The pathologist must take into consideration the history of the disease and often the correct diagnosis can be made only after carefully weighing the information from all sources; history, physical examination, radiologic study, clinical laboratory tests and biopsy. To deny the pathologist clinical information often defeats the purpose of biopsy resulting in inadequate or incorrect diagnosis.

The lack of standards in diagnosis and classification of these diseases has lead to confusion between clinicians, pathologists and radiologists. When lymphnodes, bone marrow or parenchymatous organs are involved by a tumor process the symptoms and signs which the clinician observes are caused by the impaired function of the structures. The pathological entity is only defined by determining the cell giving rise to the involvement. The response to irradiation therapy is the

radiologist's yard stick of classification. In spite of the difficulties encountered it is of paramount importance to the patient that the nature of the condition be correctly identified. The earlier this is done the greater are his chances of having a prolonged and more comfortable life through the use of irradiation therapy. Efforts should, therefore, be made towards standardization of classification and mutual understanding of these diseases. In the following paragraphs the fundamental nature of lymphoblastoma is presented.

In the analysis of proliferative processes in general the lesions are separated into two great groups. Here the proliferation is reactive and due to a more or less definitely known injurious agent. The proliferation occurs in an orderly fashion usually patterned after the original tissue and is under the influence of some controlling mechanism which orders a halt when a sufficient amount of new tissue has been formed. Contrasted with this is the second great group of proliferative lesions which are called neoplasms. They are defined as autonomous tissue proliferations of unknown etiology which are not under control of any body mechanism and serve no useful purpose. Since neoplasms are without known cause some other basis of classification must be employed and the most satisfactory substitution is a division based on the type cell which is proliferating. At present our interest concerns only the lymphocyte and its neoplasms, the lymphoblastomas.

Normal growth of the lymphocyte results in the formation of both fixed and circulating tissues. Reactive hyperplasia may produce lymphocytosis in the blood or local lymphocytic accumulations. It is expected that the neoplastic proliferations of the lymphocyte should show a similar distribution



(localized and circulating). The blood forming tissues of the entire body form a continuity that is unlike that of any other tissue, and it becomes necessary to consider the lymphoid tissue, reticulo-endothelial tissue, myeloid tissue, etc., distributed throughout the entire body as continuous systems with a circulating fluid stroma. The connection of one part of the system with another is, therefore, very intimate. Neoplastic proliferations of the lymphocytes may remain within the lymphoid system for a long time, spreading from one focus to another and one lymphnode group to another before extending beyond its borders. Other forms may quickly invade adjacent tissues and metastasize to areas outside the lymphoid system, exhibiting malignancy from the onset. On the basis of these properties lymphoblastoma may be classified as follows:

1. Leucemic.
2. Aleucemic.
3. Sarcomatous.

#### 1. Leucemic lymphoma (lymphatic leucemia).

Lymphocytes are present within the circulating blood in greatly increased numbers and a blood count of 25,000 has arbitrarily been set as the lower limit of leucemia. Although the blood findings may be the most conspicuous part of the clinical picture, proliferation of lymphocytes in fixed tissues of the lymphnodes, spleen, bone marrow and liver form the important underlying basis of the disease. Sooner or later these foci of neoplasia become clinically manifest and very bulky tumors may be formed. The course of the disease may be acute or chronic, lasting from a few weeks to 10 to 12 years, but fundamentally the disease process is the same. Leucemia may exist early in the course of lymphoblastoma and persist throughout its natural history. At other times it appears later either spontaneously or after irradiation therapy, or may be present early and then disappear. Leucemia sometimes terminates in frank sarcoma with local tissue invasion producing massive tumors.

The neoplastic cells in leucemic lymphoma vary from fully mature small lymphocytes in chronic cases to larger lymphoblastic stem cells in the acute forms. The affected lymphnodes show an increase in size of primary nodules due to proliferation of lymphocytes. With progress the nodules become confluent and the node becomes a homogeneous mass of lymphocytes with the normal architecture completely obliterated. There is very little change in the reticular supporting tissue. The lymphnode enlargement is usually quite generalized, although a focus of more marked involvement is often present. In the spleen the lymphoid Malpighian nodules become enlarged, encroaching upon the red pulp, often obliterating it. In the liver the portal areas are enlarged by nodules of lymphocytes which may also infiltrate between the liver cords. In bone marrow and other organs diffuse infiltrations may occur but appear to be proliferations starting in pre-existing lymphoid collections.

#### 2. Aleucemic Lymphoma.

Neoplastic proliferation of lymphocytes not associated with leucemia assume two different anatomical forms:

##### (a) Diffuse Aleucemia Lymphoma (pseudoleucemia).

The lymphnode tumors tend to be less generalized and there is usually a focus of greatest intensity. Histologically the process in the lymphnodes is the same as in the leucemic form and a biopsied lymphnode does not differentiate leucemia and aleucemia. The liver and spleen may participate in the process. Although the number of lymphocytes in the blood is not increased, immature forms are always present and may be found if careful search of blood smears is made. Frank leucemia often develops terminally in these cases and sometimes after irradiation therapy. The clinical course is the same as in leucemic lymphoma.

##### (b) Nodular Aleucemia Lymphoma (Giant follicle hyperplasia Brill-Symmers Disease).

All lymphnodes throughout the body may be enlarged although initially the disease may have distinct regional characteristics. Early the lymphnodes become enormously enlarged due to the formation of numerous nodules resembling large germinal centers. This produces the characteristic nodular appearance which is unlike other forms of lymphoma. The spleen is almost always involved and may be markedly enlarged due to enormous Malpighian nodules.

The clinical course is usually chronic and the duration of life is considerably longer than in ordinary cases of lymphoma. The condition is very sensitive to irradiation and superficial nodes well irradiated usually promptly disappear and may never swell again. In the early localized stage of the disease adequate treatment may be curative.

#### 3. Sarcomatous Lymphoma (Lymphosarcoma).

(a) Lymphocytic neoplasia may begin focally at any point within the lymphoid system, exhibit rapid and invasive growth and metastasize to locations outside this system. This process is frankly sarcomatous from the beginning and continues as a typical malignancy. Primary sites are located in lymphnodes, adenoid tissue, stomach, intestinal tract and bone marrow. Histologically the tumor tissue is made up of immature lymphocytic cells and the more atypical the cell the more malignant is the tumor. Typically there are no abnormal findings in the blood but in rare cases the sarcomatous process may become leucemic.

These neoplasms are likewise highly radio-sensitive but since they metastasize early the chances of cure are markedly reduced.

(b) Lymphocytic neoplasia of the leucemic or aleucemic forms described above may after a prolonged period of growth within the lymphoid system, assume more rapid growth, become invasive and metastasize. Terminally they are truly sarcomatous.

This entire group of conditions which have been termed lymphatic leucemia, pseudoleucemia, giant follicle hyperplasia, lymphosarcoma, etc., would,

therefore, seem to form a continuous group. All are neoplastic proliferations of the lymphocyte. The clinical and anatomical types are dependent upon variations in rapidity of growth and degree of differentiation of the tumor cells, no different than other forms of malignant disease. The mobile nature of the tissue, however, permits a greater diffusion of the neoplasm through the involved

system than occurs in other forms of neoplasms.

The lymphoblastomas form the most definite entities of the various neoplastic diseases of the blood forming tissues. Neoplasms of the other leucocytes—myeloid cell (myeloblastoma) and reticulum cell (reticulo-blastoma and Hodgkins Disease) will be considered at another time.

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## Epidemic Encephalitis

(Report of a Sporadic Case)

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IN PIMA COUNTY, Arizona, no case of encephalitis has been reported for at least the past seven years. The occurrence, therefore, of even a sporadic case of what would appear to be somewhat a typical form of the disease would appear to be worth reporting, especially in view of the increasing prominence which the condition has recently been attaining. It is unfortunate that most neurological texts of my acquaintance emphasize the difficulty of early diagnosis of sporadic cases rather than offering any help in recognition, and they are uniformly uninformative concerning therapy, early or late.

### REPORT OF CASE

The patient, a 34-year-old white male whose ordinary occupation had been that of a salesman, but who had up to two or three weeks prior to his initial examination been working on a farm near Tucson, was seen for the first time on January 22 of this year with the complaint of moderate weakness in both shoulders, arms and hands, and the right leg, together with a sensation of soreness or itching and burning on pressure over the shoulder girdle. These symptoms had begun some ten days before, at which time he had noticed a slight stiffness of the neck and the onset of the soreness of the shoulders, which formed one of his main presenting complaints. The weakness in his arms had begun very suddenly on the morning of January 12, 1940, when on arising he became aware of a slight clumsiness in handling various objects. The weakness and shoulder discomfort continued to become progressively worse up to the date on which he presented himself for examination.

His past history was negative save for a mild sinusitis and a mild bronchitis, both of long standing. He had come to Arizona in October of 1939 though not for his health, and since that time the sinus and bronchial disorders had steadily diminished. Close inquiry, however, revealed the fact that he had had a cold of moderate severity about a month before the onset of symptoms; he did not know whether he had had any fever at that time or not, but he was unable to work only for a day, whereupon he returned to his job of farm laborer. As an aside, it is worthy to note that he had had no contact of any sort with horses while doing farm work, nor were there any sick horses on the farm on which he was employed during the time

he remained there, which covered a period of about three months.

Physical examination revealed a slight, well-developed and well-nourished white male, afebrile, and weighing 137 pounds stripped. The sinuses were normal to transillumination and pressure pupils round and reactive to light and accommodation, the fundi and extrinsic ocular muscles normal. The teeth were in moderate need of repair, dental hygiene only fair. Examination of the heart, lungs, abdomen and genitalia were quite negative. The blood pressure was 130/82-80 on exertion, rapidly falling to 106/76-66 on rest. Rectal examination revealed a slight but definite relaxation of the sphincter ani and a slight induration of the right lobe of the prostate, without tenderness.

Neurological examination revealed no stiffness of the neck, or Kernig's sign; deep reflexes with the exception of the right biceps jerk, which was completely absent, were slightly exaggerated; abdominals absent; cremasterics sluggish and obtainable on the right side only. There were no seasonal disturbances save for a slight uncertainty in the finger to finger to test. The Romberg was negative.

Routine laboratory examinations on the same day and the day following revealed a negative blood Kahn; a normal urine, 5,490,000 RBC, with a Hb of 14 gms. by the Haden Hausser method; the WBC was 6,700, and the differential showed 48% segmented pmn's, 1% non-segmented pmn's, 42% lymphocytes, 4% monocytes, and 5% eosinophiles. The sedimentation rate was 2.5 in 60 minutes.

On the night of January 22, the patient noticed a slight difficulty in starting the urinary stream; a slight difficulty as well in defecation, stating that he felt that he did not have enough strength in his abdominal muscles to move his bowels; it was, in fact, necessary for him to resort to a cathartic at this time, a thing he had rarely done in the past.

On the basis of these findings, a tentative diagnosis of encephalitis was made, and the patient hospitalized for observation.

Observation consisted mainly of a single lumbar puncture, after which the patient, being in severe financial difficulty, which had led to the more than casual entertainment of the thought that he might be hysterical, was permitted to return home. The results of the lumbar puncture, however, removed thoughts that the disturbance might be on a psychic basis; the fluid flowed freely, though slowly, and the Queckenstadt test was positive. The clearness of the spinal fluid, which appeared entirely normal, militates against the thought of a blockage; nevertheless, only about 5 cc. could be withdrawn before the flow became so slow as al-



most to stop completely. The Pandy was negative, but the Ross-Jones globulin test was 1 plus; the cell count was 13, 68% lymphocytes and 32% polymorphonuclears. The spinal fluid Wassermann was negative; the Lange gold curve gave a good reading of 11223320000, which was interpreted as being definitely abnormal, though only weakly so. The lack of sufficient quantity of fluid prevented the doing of either a pellicle formation or tryptophane test, nor was there enough to have allowed the performance of a spinal fluid sugar, the results of which would have been of interest.

The patient returned to work for about a day after leaving the hospital, after which his progress downhill towards complete invalidism was extremely rapid. The paresis which was his original complaint developed into a definite flaccid quadriplegia; the reflexes, however, with the exception of the right biceps jerk, which remained absent, continuing to be somewhat hyperactive. A prick by a hypodermic needle, used in giving thiamine chloride on half a dozen occasions (therapy which, incidentally, was without any noticeable effect, either subjective or objective) caused marked tonic contractions of the arm, and now and then there could be seen fibrillatory quivering of the various voluntary muscles.

The patient continued in this state for about a week, though the discomfort in the shoulder girdle seemed to him to have got less, when there was fleeting return of the abdominal reflexes. They were, however, present on one occasion only, and were quickly fatigued to the point of extinction. The day following the return of the superficial reflexes, the paralysis of the lower limbs began to take on a spastic quality, and the patient's wife stated that it sometimes took her as long as 15 minutes to straighten out his legs after he had been sleeping. After being awake a time, flaccidity returned. This form of spasticity gradually spread to involve the arms, and on February 10 distinct patellar clonus was present, while on February 12 ankle clonus elicited.

At about the same time as the onset of the periods of spasticity, the patient stated in response to a direct question that he was becoming unsure of the position of his hands or feet occasionally, a fact confirmed by examination done at that time, when it was also found that the Babinski had become suggestively positive bilaterally and there was a beginning hyesthesia of both hands and forearms. The Babinski later became strongly positive and the hyesthesia a definite anaesthesia of the forearms and back of the hands. The cremasteric reflexes also disappeared.

One further development which might have been considered to have had an ominous prognostic significance occurred during the week of February 4. The patient began to complain of distinct difficulty of breathing on occasion, and there was a definite sternocleidomastoid type of respiration required each time the patient exerted himself to the extent of trying to speak over any extended period. The chest moved very little with respiration. The impression, however, continued to be that his difficulty arose from a disturbance of his intercostals, either with or without a concomitant diaphragmatic disturbance rather than from a bulbar involvement, since he did not complain of trouble in swallowing, though it was an effort for him to clear his throat of mucus on awakening in the morning. There was a slow gradual return of muscle function over the following month, but co-ordination has continued poor.

At no time was there any mental involvement whatsoever, and the patient's mental outlook re-

mained almost unbelievably good throughout a very trying period.

#### COMMENT

Von Economo treats of several types of encephalitis, the three commonest forms being the somnolent ophthalmoplegic type, in which there are marked disturbances of the sleep cycle and derangements of vision, such as diplopia; the hyperkinetic type, in which the presence of various sorts of delirium, so-called "derailment of action," in which an act is begun but not completed, choreiform movements and similar symptoms are most in evidence; and the amyostatic-akinetic type, which is the form oftenest seen as a chronic state, that is, a Parkinsonism. In addition to these classes, a few others, less common, are noted by Von Economo; namely a pseudo-tabetic form, a psychotic form, and a monosymptomatic form, in which last group falls epidemic hiccough, probably. Clearly, the case here presented cannot be put wholly into any of these pigeon holes; it is, however, worthy of note that atypical forms of encephalitis are common enough, and there have been more facts in this case, even from the beginning, suggesting encephalitis rather than any other diagnosis. Further, Wechsler states that any disturbance in which there is present a combined pyramidal and extrapyramidal lesion can be diagnosed in retrospect as having been, in all likelihood, encephalitis. This late conclusion, unfortunately, does the patient no good whatever. Equally unfortunately, even a diagnosis made in the earliest stages of the disease seems to have value only academically, and to the physician rather than the patient; recommendations concerning abortive or curative therapy being non-existent.

One final remark is probably in order; that is the question of the propriety of calling such a condition as the "epidemic" when the probability is that the disease is not even contagious, as witness the fact that the patient shared a bed with his wife during the entire course of his illness, both after frank symptoms and throughout the period of prodromal symptoms, and that she remained in very close contact with him at all times; yet she continued to be altogether well. Indeed, Wechsler remarks that the contagiousness of the disease is so slight, if it can even be considered to exist at all, that cases of more than one victim of the illness in a family must be considered rather happenstance than evidence of contagion. Yet it is hard to know what to call this since the etiology is still rather vague; and much as there are sporadic cases of meningococcus meningitis—or epidemic meningitis, if you will—so, perhaps, there is justification for referring to instances of the sort reported here as occurrence of sporadic cases of epidemic encephalitis until a better term is devised.

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Since submitting this case, reports on the blood serum examinations by the Hooper Foundation have been received. The serum failed to give reactions diagnostic for either the St. Louis or equine forms of encephalitis.

## The Significance of Convulsions

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CONVULSION has been described as "a violent and unnatural contraction of muscles," and broadly considered may be assumed to indicate a disordered condition of the central nervous system. The occurrence of a violent, generalized, epileptiform convulsion is most dramatic and awe-inspiring, and has commanded the attention of the laity as well as medical men throughout the ages. It is natural that the ancients, lacking a knowledge of anatomy and physiology, interpreted convulsions with superstition and ascribed their incidence to divine influence or to the possession of the body by evil spirits. Hippocrates (460 to 370 B.C.) was the first to recognize that epilepsy is due to natural and not divine nor demoniacal influences, and that some disturbance in the brain must be the explanation of its manifestations. His dissertation, "On the Sacred Disease," was a powerful argument against the then current superstitious beliefs in regard to epilepsy, and represents a conception of the functions and derangements of the brain centuries ahead of his time. It may be of interest to quote some extracts from this work of "The Father of Medicine."

"It is thus with regard to the disease called sacred; it appears to me to be no wise more divine nor more sacred than other diseases, but has a natural cause from which it originates like other affections. Men regard its nature and cause as divine from ignorance and wonder, because it is not at all like to other diseases. And this notion of its divinity is kept up by their inability to comprehend it . . . they who first referred this disease to the gods appear to me to have been just such persons as the conjurers, purificators, mountebanks and charlatans now are, who give themselves out for being excessively religious and as knowing more than other people . . . For, if they imitate a goat, or grind their teeth, or if their right side be convulsed, they say the mother of the gods is the cause. Or if any excrement be passed, which is often the case, owing to the violence of the disease, the appellation of Enodius is adhibited! . . . But if foam be emitted by the mouth, and the patient kick with his feet, Ares gets the blame. But terrors which happen during the night, and fevers, and delirium, and jumpings out of bed, and frightful apparitions, and fleeing away, all these they hold to be the plots of Hecate, and the invasions of the Heroes. . . . But in them, the brain is the cause of this affection, as it is of other very great diseases. . . . The brain of man, as in all other animals, is double, and a thin membrane divides it through the middle, and therefore the pain is not always in the same part of the head; for sometimes it is situated on either side. . . . This dis-

ease, then, affects phlegmatic persons, but not bilious. It begins to be formed while the foetus is still in utero. For the brain, like the other organs, is depurated and grows before birth. . . . And if the defluxions be more condensed, the epileptic attacks will be more frequent. . . . (in the attack). The patient loses his speech, and chokes, and foam is issued by the mouth, the teeth are fixed, the hands are contracted, the eyes distorted, he becomes insensible, and in some cases the bowels are evacuated, and these symptoms occur sometimes on the left side, sometimes on the right, and sometimes in both.

"For the brain becomes more humid than natural, and is inundated with phlegm, and becomes wet and humid. This you may ascertain in particular, from beasts of the flock which are seized with this disease, and more especially goats, for they are most frequently attacked with it. If you will cut open the head, you will find the brain humid, full of sweat, and having a bad smell. And in this way truly you may see that it is not god that injures the body, but disease. And so it is in man.

"And men ought to know that from nothing else but from the brain comes joys, delights, laughter and sports, and sorrows, griefs, despondency and lamentations. And by this in an especial manner, we acquire wisdom and knowledge, and see and hear, and know what are foul and what are fair, what are bad and what are good, what are sweet, and what are unsavory; some we discriminate by habit, and some we perceive by their utility . . . . And by the same organ we become mad and delirious, and fears and terrors assail us, some by night, and some by day, and dreams and untimely wanderings, and cares that are not suitable, and ignorance of present circumstances . . . . all these things we endure from the brain, when it is not healthy, but more hot, more cold, more moist, or more dry than natural, or when it suffers any other preternatural and unusual affection . . . . In these ways I am of opinion that the brain exercises the greatest power in the man . . . and the eyes, the ears, the tongue and the feet, administer such things as the brain cogitates. . . . It is the brain which is the messenger to the understanding. . . . And the disease called Sacred arises from causes as the others, namely, those things which enter and quit the body, such as cold, the sun, and the winds, which are ever changing and are never at rest."

And again in his discussion of surgical operations on the cranium in the treatment of injuries of the head: "Incisions may be practiced with impunity on other parts of the head, with the exception of the temple and the parts above it, in which region an incision is not to be made. For convulsions



seize on a person who has been thus treated; and if the incision be on the left temple, the convulsions will seize on the right side; and if the incision be on the right side, the convulsions take place on the left side."

In considering the modern viewpoint of the significance of convulsions, it is essential to review some of the established facts of physiology of the nervous control of the voluntary muscular system, since it is the voluntary, or striped, muscles which are predominately involved in convulsions.

The physiological contraction of voluntary muscles is dependent upon nerve impulses which ultimately reach the muscles via the lower motor neurons. Normal movements are effected by a harmonized, or patterned, distribution of multiple nerve impulses so organized as to produce co-ordinated and purposeful or useful results. The source of nervous impulses which cause motion may be at various levels of integration in the central nervous system, *e. g.*, conscious, or willed, movements result from impulses which arise in the motor area of the cerebral cortex; automatic movements, as respiration, from impulses arising in the medulla; and reflex movements, from impulses excited in the various reflex centers in the brain stem and spinal cord. In each case the patterning and distribution of the impulses is appropriate to effect the physiological movement.

In contrast to normal movements, convulsions are more or less violent and inco-ordinated contractions of groups of muscles, and are caused by what might be called showers or avalanches of nervous impulses which overflow the limits of normal physiological patterns. They represent the irritative, in contrast to the paralytic, effect of pathological processes in the central nervous system, and the type of the convulsion varies with the anatomical level at which the irritating process occurs. With respect to the place of origin of the impulses causing their manifestations, the following types of convulsions may be mentioned: unilateral, or Jacksonian, convulsions, which result from irritations of the cerebral cortex; generalized, or epileptiform convulsions, from impulses probably released in the diencephalon and mesencephalon; myoclonic convulsions, which evidence indicates arise largely in the brain stem; cerebellar fits, which are more or less generalized tonic and clonic convulsions associated with lesions of the dentate nucleus of the cerebellum; torsion spasms, or writhing convulsive movements, associated with pathology of the extrapyramidal motor system; tonic spasmodic contractions of the lower extremities associated with lesions of the spinal cord; decerebrate rigidity from lesions of the midbrain; tetanic convulsions caused by tetanus and strychnine poisoning in which the neural synapses of the spinal cord are affected, lowering the threshold for the passage of impulses to the peripheral motor nerves. To the list should also be added the local and generalized convulsive movements of hysteria which are dramatic and at times violent in their manifestations, but in which

the patterns of normal voluntary movements are utilized, and of which psychogenic factors are the cause. It may be useful to consider briefly the characteristic convulsive symptoms which result from lesions at different levels of the central nervous system.

In severe but incomplete lesions of the spinal cord above the lumbar enlargement, a hypertonic or spastic rigidity often occurs in the muscles supplied by spinal segments below the level of the lesion. With this spasticity is commonly associated a tendency to spasmodic flexion contractions of the lower extremities. These convulsive movements are essentially of the nature of withdrawal or defense movements. They are easily elicited by sensory stimuli, and although they often appear to occur spontaneously, they are probably always reflex in character, even when the stimulus is not apparent. When paraplegia is complete it is a striking phenomenon when the lower extremity is convulsively flexed at the ankle, knee and hip, and at times raised from the bed in response to a trifling stimulation.

Decerebrate rigidity, due to lesions of the mid-brain and upper part of the brain-stem, is characterized by tonic rigidity of all of the extremities in extension. Decerebrate rigidity is produced experimentally in animals by section of the brain-stem between the vestibular nuclei and the red nucleus. It represents a greatly exaggerated or spasmodic action of the anti-gravity muscles *i. e.*, the muscles which maintain the weight of the body against the force of gravity in order to maintain the erect position. This type of rigidity disappears when the vestibular nuclei are involved in the lesion.

Jacksonian epilepsy, or unilateral convulsions, result from lesions or local irritations of the motor areas of the cerebral cortex. They usually begin in the face, the arm or the leg, and the convulsive movements may be limited to one of these areas; it is common, however, for the disturbance to spread from one area to others until the face and both extremities are involved in a unilateral convulsion. The tendency for unilateral convulsions to spread is very characteristic, and the spread often continues until the convulsion becomes general and all of the voluntary muscles of the body are contracting violently, and the patient is unconscious. The cause of Jacksonian convulsions is some irritation of the cerebral cortex within or in proximity to the motor area, and the convulsive movements are on the contra-lateral side involving muscle groups that are represented by the portion of the motor cortex that is irritated. Although unilateral convulsions were described as early as the time of Hippocrates, Hughlings Jackson, one of the greatest pioneers of neurology, made many contributions to the subject during the years from 1861 to 1870. His work was outstanding, not only in the analysis and interpretation of convulsive symptoms associated with cerebral lesions, but also in promoting the knowledge of cerebral physiology and cerebral localization

from the broadest viewpoint. He called attention to the important fact that functioning groups of muscles may be divided into those which are located on one side of the body, and those which include muscles on both sides. The unilateral muscle groups function unilaterally independent of any synergistic action of muscles on the opposite side, and include muscles in the lower part of the face, of the arm and of the leg. The bilaterally functioning muscle groups are composed of muscles distributed on both sides and not synergistically in bilateral movements. The movements of these bilateral groups cannot be performed as unilateral voluntary movements. Muscles comprising the bilateral groups are those of the trunk, neck, pharynx, larynx and eyes. It was Jackson who noted and emphasized the fact that hemiplegia affects predominately and almost exclusively the muscle groups which function unilaterally. He also noted that the same muscle groups were affected primarily in unilateral convulsions.

Considering the mechanism of convulsive symptoms, it will be noted that those which are caused by lesions of the spinal cord and the brain-stem are in the nature of grossly exaggerated reflex capacity. The flexion spasms occurring in cases of spastic paraplegia represent in a convulsive form the normal withdrawal reflex elicited by painful stimulation of the foot. Decerebrate rigidity resulting from mid-brain lesions consists of the spasmodic contraction of anti-gravity muscle groups. In each of these instances the convulsive symptoms occur when reflex mechanisms of the spinal cord or the brain-stem are released from the controlling or "inhibitory" influence of motor neural structures at higher levels in the central nervous system. In contrast to the convulsive symptoms due to the release of the lower motor mechanisms from cerebral control are those which are caused by irritations of the cerebral cortex, and in particular the so-called Jacksonian seizures. Irritation of the hand area in the motor cortex causes convulsive movements of the hand which are due to the passage of nervous impulses over the same pathways traversed the impulses which produce voluntary movement. Experimentally, a slight impulse of brief duration causes a quick and localized movement, but with increasing intensity of stimulation the resulting movements extend into other muscle groups whose motor areas in the cortex are not directly irritated. The spread or "march" of the convulsive movements may continue to extend until the convulsion becomes general, the effect resembling the cumulative force of an avalanche. When the spread of convulsive movements in a Jacksonian attack reaches the stage where all of the voluntary muscles are involved, consciousness is lost and the clinical picture is then essentially that of a major epileptiform seizure.

Generalized or epileptiform convulsions, which when habitual are commonly called "epilepsy," constitute one of the outstanding problems of neurology. The neural mechanism of an epileptic fit ap-

pears to be a brief but violent discharge of nervous impulses sweeping through the central nervous system, causing powerful tonic and clonic contractions of the entire musculature of the body, arresting respiration with resulting cyanosis, producing a deep state of coma, and often relaxing the sphincters of the bowel and bladder. This discharge of nervous energy might be compared to the discharge of an electric battery or condenser through short-circuits. It may be assumed that each neuron, or structural unit of the nervous system, contains a store of latent energy ready to be discharged through its axon in the form of a nervous impulse when the cell is adequately stimulated. This is the basis of the physiology of the nervous system, and normal function results from the orderly arrangement of neuronal patterns through synaptic connections and the orderly discharge of nervous impulses through these patterns. As a hypothesis it might be suggested that the complex neuronal patterns of the motor mechanisms of the brain contain an enormous charge of available potential nervous energy which is normally discharged in an orderly way in physiological activity, and that there is a critical point, or convulsive threshold, beyond which a stimulus will break down the orderly discharge and cause the disorderly or explosive release of nervous energy to produce an epileptiform convulsion. Normally the convulsive threshold is sufficiently high to protect most of us from epileptiform attacks throughout the ordinary vicissitudes of life, but with adequate stimulation, such as an intravenous injection of metrazol, no one is immune. In individuals habitually subject to convulsive attacks, it may be assumed that there is a low convulsive threshold, or that there is some recurrent stimulus of unusual intensity acting on the motor patterns of the brain. It may therefore be concluded, according to this hypothesis, that when a convulsion occurs there has been a stimulus adequate to pass the convulsive threshold, whether the latter is high or low; if we use the familiar terms "predisposing" and "precipitating" factors, the former implies a low convulsive threshold from whatever cause, and the latter some stimulation of known or unknown character applied to the motor mechanism of the brain.

The precipitating causes of epileptiform convulsions are innumerable, and may be assumed to be either physical or chemical in nature, since convulsions can be produced experimentally by either physical or chemical stimuli. A physical (*e. g.*, electrical) stimulus may be adequate to produce a convulsion when applied to the cerebral motor mechanisms at levels from the brain-stem to the cortex; and at the cortical level a stimulus applied to a non-motor part of the cortex, or at some distance from the motor strip, may produce a convulsion. From the standpoint of diagnosis this fact is of great importance, since in many cases it helps to explain the significance of the "aura" and gives a clue to the location of the origin of the precipitating stimulus. A stimulus applied to the cor-



tex tends to spread by contiguity and to excite nervous impulses in adjoining areas. This spread, or "march," of excitation is to a certain extent proportional to the strength of the stimulus and to the excitability of the nervous system. A generalized convulsion results when the spread of excitation attains the momentum of an avalanche of nerve impulses which are discharged over the motor projection pathways. For several reasons it appears that the onset of a general convulsion occurs when the spread of excitation reaches the region of the diencephalon. (1) The sudden loss of consciousness indicates a profound disturbance of the hypothalamic region. (2) The simultaneous onset of a generalized tonic convulsive state closely analogous to decerebrate rigidity. (3) The fact that general convulsions can be induced to decorticated animals, showing the cerebral cortex is not essential for the occurrence of convulsions. (4) The synchronism of clonic movements including the entire musculature of the body indicates nervous discharges at the mid-brain level rather than separate but synchronized discharges in the motor areas on both sides of the brain. (5) The active participation of trunk muscles which have but little representation in the cerebral cortex. (6) The acute disturbances of respiratory, circulatory, pupillary and other functions which are regulated by automatic and vegetative neural mechanisms at the level of the hypothalamus and mid-brain.

Disturbances of consciousness may be said to be one of the most constant phenomena of all epileptiform convulsions. It is true that in Jacksonian attacks the unilateral convulsions may be severe without loss of consciousness; but even with Jacksonian seizures the patient loses consciousness when the fit becomes general. The accumulation of clinical and experimental evidence strongly indicates that the normal state of awakesness or awareness, *i. e.*, physiological consciousness, depends upon the functional activity of areas in the anterior part of the hypothalamus, and normally integrated, intelligent behavior requires the integrated functions of this area in connection with the basal ganglia and the cerebral cortex. The diencephalon represents the level of "awakesness," and the cerebral cortex the level of intelligence, the memory of experiences, and the processes of thought associations. It seems reasonable to conclude that the loss of consciousness during a general convulsion may be due to the disruption of a delicately adjusted balance of functions which constitute physiological consciousness by the avalanche or explosion of high potential nervous impulses overflowing the limits of the neuronal patterns of normal functions.

From the above considerations it appears that epileptiform convulsions, of whatever cause, present a fairly uniform clinical picture, and are due to violent discharges of nervous impulses from the level of the diencephalon and mesencephalon; these discharges may in turn be due either to an avalanche of impulses originating at a point of irritation in the cerebral cortex, or to direct irritation in

the basal region as in the case of tumors of the third ventricle, to convulsant drugs, and to various other factors. A convulsion may therefore be looked upon as a more or less stereotyped clinical symptom comparable to an attack of vomiting or coughing, and like them may be due to any one or a combination of a long series of possible factors; and each case presenting convulsions is a problem for diagnosis.

The following is a partial list of conditions which are recognized as possible factors in the production of epileptiform convulsions:

- A. Cortical and subcortical foci from which a spreading or avalanche effect originates which results in convulsions and with the frequent occurrence of aura.
- I. Traumatisms which result in cerebral irritation,
  - a. Concussion.
  - b. Contusion.
  - c. Compression.
  - d. Hemorrhage.
  - e. Laceration resulting in cortical scars.
  - f. Meningo-cortical adhesions.
  - g. Local ischemia.
  - h. Local congestion.
  - i. Local edema.
- II. Infections which affect the cortex or subcortex.
  - a. Meningitis localized over cortical areas.
  - b. Intracranial extension of infections from nasal sinuses, middle ear, traumatism, etc.
  - c. Metastatic infection from pulmonary area.
  - d. Encephalitis.
    1. Rabies.
    2. Syphilis, paresis and meningovascular lues.
- III. Cerebral tumors, cysts, and abscesses involving the cortex or subcortex.
- IV. Congenital anomalies, hydrocephalus from any cause.
- V. Arteriosclerosis resulting in
  - a. Cerebral vascular accidents.
    1. Hemorrhages.
    2. Thrombi.
    3. Emboli.
  - b. Impaired cerebral circulation.
  - c. Areas of softening, porencephaly.
- VI. Degenerations.
  - a. Lobar sclerosis (Pick's disease).
  - b. Diffuse sclerosis (Schilder's disease).
  - c. Amaurotic idiocy.
  - d. Alzheimer's disease.
- B. Physical foci of irritation in the basal region affecting more directly the hypothalamus, mid-brain and brain-stem, usually without aura.
- I. Traumatism causing lesions in the basal region.
  - a. Hemorrhage.
  - b. Scar tissue and adhesions.
- II. Infections which affect the basal region.
  - a. Basal meningitis.
  - b. Diffuse meningitis, especially the more severe types.

- c. Encephalitis.
    - 1. Epidemic encephalitis, various strains.
    - 2. Encephalitis complicating measles, pertussis, mumps, scarlet fever, smallpox, etc.
    - 3. Encephalitis from vaccinations.
  - III. Tumors, cysts, aneurisms in the basal region.
    - a. Tumors in the third ventricle.
    - b. Tumors invading the hypothalamus and mid-brain.
    - c. Tumors of the hypophysis.
    - d. Arachnoid cysts.
    - e. Paracytes and their cysts.
    - f. Aneurisms of arteries at the base of the brain.
  - IV. Spontaneous basal hemorrhage.
    - a. Hemorrhage from sclerotic arteries.
    - b. Hemorrhage from aneurisms and defective arteries.
    - c. Hemorrhage due to purpura.
  - V. Disseminated sclerosis.
  - VI. High intracranial pressure.
- C. Precipitating causes of convulsions where there is no demonstrable pathology of the nervous system, and which probably act directly on the structures of the hypothalamus and mid-brain.
- I. Convulsant chemicals and drugs.
 

a. Camphor.	f. Lead.
b. Metrazol.	g. Phosphorus.
c. PicROTOXINE.	h. Ergot.
d. Absinthe.	i. Aconite.
e. Alcohol.	j. Chenopodium.
  - II. Endogenous toxicoses.
    - a. Uremia.
    - b. Eclampsia.
  - III. Endocrine disturbances.
 

a. Hyperthyroidism.	c. Hyperinsulinism.
b. Hypoadrenalism.	d. Hypoparathyroidism.
  - IV. Metabolic deficiencies.
    - a. Anoxia.
      - 1. Asphyxias, all types.
      - 2. Surgical anesthesia, especially nitrous oxide.
      - 3. Stokes-Adams syndrome.
      - 4. Carbon monoxide.
      - 5. Carotid sinus reflex.
    - b. Hypocalcemia.
    - c. Hypoglycemia.
    - d. Alkalosis.
  - V. Peripheral irritations ("reflex epilepsy").
    - a. Special epileptogenous or trigger zones.
    - b. Phymosis.
    - c. Adenoids.
    - d. Teething.
    - e. Intestinal parasites.

D. Factors of undetermined significance in regard to the etiology of "idiopathic epilepsy."

- I. Heredity.
- II. Psychic traumata.
- III. Allergies.
- IV. Infancy and childhood.

Lennox and Cobb have called attention to the fact that certain metabolic factors affect the incidence of epileptic attacks, *e. g.*, acid-base equilibrium, water balance, oxygen supply to the brain, sodium and calcium concentrations in the blood.

Alkalosis favors the occurrence of convulsions, acidosis to prevent them.

Water retention, especially cerebral edema, acts as a precipitant, and dehydration as a preventative.

Oxygen deprivation tends to excite convulsions, and this may be the explanation for the occurrence of convulsions in many cases in which a low oxygen concentration is an incident, such as Stokes-Adams syndrome, irritable carotid sinus, etc.

Low calcium and high sodium concentrations in the blood tend to lower the convulsive threshold, and so are factors in the incidence of spells.

It is common knowledge that children are especially prone to epileptiform attacks during the period of teething and in connection with febrile diseases and gastro-intestinal disturbances. With advancing years the incidence of convulsions progressively diminishes, and it is rather rare for an epileptic habit to begin after the second decade.

The problem of heredity in relation to epilepsy is still a matter for debate. Its importance as a factor has been losing ground in proportion to the increase in knowledge in regard to the organic factors of convulsions, but most writers still consider that many persons are constitutionally predisposed by heredity in some way that renders them susceptible to epileptiform attacks. New evidence has recently been presented on this subject by Lennox, Gibbs and Gibbs (*Journal American Medical Association*, September 9, 1939), based upon electro-encephalographic examinations. In their conclusions they state: "Electro-encephalographic tracings were made simultaneously over six areas of the cortex in 138 parents, children or siblings of patients with epilepsy. Definitely abnormal records were obtained in 54% of the relatives, against 6% in a control group who were unrelated to epileptic persons. In 46 of the families, records were made of both parents. In 28% both parents and in 94% at least one parent had abnormal records. We believe this evidence indicates that the dysrhythmia of epilepsy is inheritable and that such a dysrhythmia when demonstrable may represent a predisposition to epilepsy or some allied disorder."

It is of interest to consider the mechanism of the epileptiform convulsion with regard to the self-limiting factor. In a typical spell the convulsions cease after 1 or 2 minutes, and consciousness returns gradually some time later. Grinker, in his text-book, "Neurology," makes the following comment: "In general, it can be said that the acid-base equilibrium is normal in the interparoxysmal period, perhaps tending slightly to the alkaline side. During and after the fits, perhaps because of asphyxia and muscular contraction, there is acidosis. It may be conjectured that the acidosis, produced by the tetanic apnoea of the fit and by muscular exertion, may explain the spontaneous cessation of



the attack. . . . I have seen cases of status epilepticus where contraction of the muscles of respiration did not occur and extreme dyspnoea was present during the entire fit, so that carbon dioxide was continually being blown off through the lungs. By this means, the alkalosis persisted and the convulsions were continuous until the death of the patient."

Another current theory of the self-limiting factor of the attack is that the violent nervous discharge drains the structures from which they arise of their reserves of available energy and leaves them temporarily exhausted. This theory finds some support in the presence of Babinski's toe reflex immediately after the fit, indicating impairment of pyramidal tract function possibly due to exhaustion. It seems probable that both of these factors, and probably others, may operate to make the epileptiform convulsions a self-limited episode. The rapid recurrence of convulsions in status epilepticus might be explained in part by the alternating discharge and recovery of nerve cells, and in part by the fluctuating acid-base relationship.

It is a striking fact that typical epileptiform convulsions can be precipitated by so many different factors, and that the incidence of attacks is influenced by so many conditions. It is also a striking fact that all epileptiform convulsions are remarkably similar without regard to the causes. The typical fit is a classic picture, and can be produced at will in normal individuals under test conditions. With the classic epileptiform convulsion as a common denominator, and the end result of many different causes, it seems reasonable to infer that all precipitating causes reach and excite the same mechanism, *viz.*, nervous patterns in the diencephalon. "All roads lead to Rome."

In the diagnosis of the convulsive states there are two main problems for consideration: first, the determination of the nature of the convulsion, and the level in the central nervous system from which it originates; and second, the discovery of factors which operate in each particular case to produce the attack. The first problem is comparatively easy if the patient can be adequately observed, or if any accurate description can be obtained. The second problem, especially in the case of epileptiform convulsions, involves a search throughout the broad field of medical diagnosis. Particular attention should be directed to a careful history, including the patient's own story, and the observations by members of the patient's family and associates. Gross lesions of the brain should always be considered and sought for by neurological examination. Spinal puncture, pneumoencephalogram, electroencephalogram, and vestibular tests may contribute important clues in regard to pathology and localization. It is discouraging to state that in studying the so-called epileptics, important evidence as to their etiology is found in less than one-half of the cases; the remainder still fall into the group called "idiopathic" or "true epilepsy," terms which are dignified by age and usage, and by their

usefulness in covering ignorance and thereby saving face for the diagnostician.

Narcolepsy, including the episodes of cataplexy, bears an interesting relationship to the convulsive states. Here uncontrollable attacks of somnolence occur, and occasional episodes of weakness and falling termed cataplexy. The disturbance of consciousness resembles sleep rather than coma, as the patient can be easily aroused as from normal sleep. The falling is collapse due to a sudden relaxation of the anti-gravity musculature, and occurs without loss of consciousness. The episodes of cataplexy and particularly by laughing or even by a feeling are commonly precipitated by emotional reactions, of amusement. During the attack, which usually lasts only a few seconds, the pupils tend to dilate, the light reflex is often impaired, and the tendon reflexes cannot be elicited. Most observers concur in the theory that narcolepsy and cataplexy are caused by disturbances in the mechanisms in the diencephalon which regulate sleep and muscle tonus, and many cases have been reported as sequelae to epidemic encephalitis. The contrast between the symptoms of narcolepsy and those of epilepsy are striking, although both appear to arise from disturbances in the same region of the brain. This contrast, however, may have a possible explanation in the theory that the epileptic fit is due to an excessive and explosive nervous discharge, while narcolepsy is a manifestation of deficient or inhibited nervous impulses in the region of the diencephalon.

During the past few years the epileptiform convulsion has attained a new status in the field of medicine, namely that of a widely employed therapeutic measure in the form of artificially induced convulsions. The treatment of schizophrenia and mental depressions by metrazol has produced many strikingly prompt and favorable results, as well as numerous fractures of bones and dislocations of joints, and also some fatalities. As yet no comprehensive theory has been presented to explain the dramatic results which have been obtained by this treatment. It is assumed, however, that in these psychoses the functional derangement is at the diencephalic level, and also that the convulsant, metrazol, acts selectively at the same level.

The problem of the significance of convulsions presents many lines for investigation and the progress of modern research is encouraging. The study of neurophysiology necessitates the interpretation of physical, chemical and electrical phenomena manifested by neurous and axones under varying conditions.

It is important to learn of the varying factors which influence the threshold of nervous discharge and to understand the nature of synaptic transmission. The September, 1939, issue of the *Journal of Neurophysiology* is entirely devoted to a symposium on the synapse. Electroencephalography has contributed much and promises more in regard

(Continued on Page 244)

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## DRAFT THE DOCTORS!

Medical men are not policy-makers. Perhaps if they were the world might not be in such a mess as it is today. Scarcely any group could have done worse than those who have blindly allowed a madman to embark on a career of butchery such as now appals civilization. It is useless to say that American medicine is possessed of no opinion regarding the present war in Europe. We must all be rather sadly aware that old values, comfortable maxims, a way of life—all are in the crucible today. What the final product may be, few dare predict. America's doctors, as good citizens of what is yet a democracy, must, like other men, decide soon on a path. To war now, with its attendant horrors—that perhaps our children may know a better world? To peace for the time being, hoping vaguely that somehow, if we muddle through, our children can also? Or, to compromise—try to exist half-way between freedom and vacillation? The choice isn't easy. The terrible reality of our dilemma is here, there, everywhere we turn. There just is no escape now from the necessity of making a choice.

The temper of the American people is plain. A ground swell of fierce resentment against the man who has brought these sad days to the world is apparent in this country. There grows a tendency to ask "why not now?" Responsible men are awak-

ening all over the land, astonished at their long sleep. Americans are re-examining those ideals they have always lived by. The question has been posed—are they worth fighting for? When, now?

The tragic state of unpreparedness that has spelled bitter defeat for the European democracies must not occur here. Medicine must do its part. In case of armed conflict, there will be broken bodies to mend, there will be last rites of mercy to perform. There must remain behind those to care for the civilian population. Wars usually bring epidemics—new problems in public health will arise. How well prepared is American medicine?

A number of the younger physicians proudly hold commissions in the reserves of the Army and the Navy. Patriotically they have worked at training problems, trying to better fit themselves for their posts. But so many are needed, and so few have responded. Plans to draft man power and industry and money should not omit the drafting of medicine. Every physician in this country should be drafted, assigned a post at home or in the field. The income of those left at home should be drastically controlled. Any excess over the scale paid the armed services should be pooled for the benefit of those who had to leave often good paying practices for the small remuneration of the armed services. If there should be no profiteering in industry, neither should there be in the professions! If the younger physicians are to offer their very lives as a pawn to destiny, let the older ones at home at least offer a portion of their monetary gains! Pretty speeches to the young man leaving a family behind, hoping to support them on the meagre salary of a junior officer, are simply not enough. That young man is no fool—he knows that a shattered practice, however good it may have been, will not feed his children. He will rightly resent any attempt on the part of those remaining behind to cash in on his withdrawal from the field. Young men who know they must go at the first call are demanding in growing strength of tone, that organized medicine work out and institute a plan fair to all. They say they only want an even break. The problem is squarely up to organized medicine. And, if our own bodies do not face it, study it, answer it correctly, depend on it that the government of the United States must and will answer it for us.

So, will the various societies of the American Medical Association lay plans of preparedness, or must they be forced to take something perhaps a lot less to their liking? Many others besides America's younger doctors are patiently waiting, waiting.

## CANCER IN ARIZONA

In 1939, 6.7 per cent of all deaths in Arizona were due to cancer. Here, again, is a disease which could be prevented through education and, in many cases, cured by reliable medical procedures.

Cancer has for years been a health problem in Arizona, and one which should have the full and



concentrated attention of professional and lay groups alike.

There is a need in Arizona, and for that matter in every other state, for developing means of opposition to certain practices which have been recommended as cancer cures but which, in reality, are absolutely worthless and undoubtedly do more harm than good.

Knowledge of this functional disorder is one of the most powerful methods of prevention and control and, we know, from medical research, that x ray, radium and surgery are the only reliable procedure for cure.

It is hoped that, within a few months, the state health department will have the facilities with which to cooperate with professional groups and organizations in an intensive program of cancer control.

At the present time only a few educational devices are available for such a program. However, with the realization of the need for such work, every effort will be made to develop the necessary facilities and to provide a source of authentic cancer information for the people of Arizona, thus offsetting the fraudulent and unethical practices which may be in use.

—Fred P. Perkins, M.D.

### PHYSICIANS NEEDED FOR ARMY SERVICE

The physician, like every other American, has become actively interested in our national security and stands ready to contribute his services as required for military preparedness.

The immediate problem in this connection is one that concerns the War Department, and primarily the young physician. The War Department must procure sufficient additional personnel from the medical profession to augment the medical services of the Regular Army as the various increases are made in the strength of the Regular Army, as authorized by Congress to meet the partial emergency. The young physician is especially concerned because it is usually advantageous, and is often more convenient for him to serve with the Army.

Present plans of the War Department are designed to make service attractive and instructive for the young physician. If the physician holds a Medical Corps Reserve commission he can be ordered to active duty if he so requests. If he does not hold a commission, but is under 35 years of age and is a comparatively recent graduate of an accredited school, he may secure an appointment in the Medical Corps Reserve for the purpose of obtaining extended active duty for a period of one year or longer. Duty is given at General Hospitals, Station Hospitals, and with Tactical Units, and embraces all fields of general and specialized medicine and surgery. Excellent post-graduate training is obtainable in connection with Aviation Med-

icine. After serving 6 months of active duty in the continental United States a Reserve officer may request duty in Hawaii, Panama, or other United States territories and possessions. The initial period for duty is for one year, and yearly extensions are obtainable thereafter until the international situation becomes more clarified and our domestic military program becomes stabilized.

Many young doctors who have served with the Army on extended active duty have taken the competitive examination for entrance into the Medical Corps of the Regular Army. Extended active duty affords an excellent opportunity for the physician to observe modern military medicine and the facilities that exist for a complete and comprehensive medical practice.

Pay is according to rank, and, including subsistence and quarters allowances for an officer with dependents, amounts to an annual sum of \$3,905 for a Captain and \$3,152 for a First Lieutenant; or, without dependents, to an annual sum of \$3,450 for a Captain and \$2,696 for a First Lieutenant. In addition, reimbursement is made for travel to duty station and return.

Further information may be obtained by writing to The Surgeon General, U. S. Army, Washington, D. C.

### DEATH RATE UP

A slight rise in the United States death rate last year, as compared with 1938, is reported by the U. S. Bureau of the Census in a preliminary tabulation for 1939 just made public.

A total of 1,387,797 deaths last year resulted in a preliminary mortality rate of 10.7 deaths per 1,000 estimated population. In 1938, there were 1,381,391 deaths and the death rate was 10.6. The death rates for 1938 and 1939 were the lowest rates, with the exception of 1933, reported since the death registration area was established in 1900.

Arizona's preliminary rate of 14.2 deaths per 1,000 estimated population was the highest in the Nation last year. The 1939 rate, however, represented a slight decrease from the 1938 rate of 14.6. North Dakota had the lowest rate in the United States last year—7.7 deaths per 1,000 estimated population. The 1938 rate was 7.4.

Twenty states reported decreases in death rates last year, compared with 1938. Rates in 21 states and the District of Columbia last year were above the previous year. Seven states reported the same death rates in 1938 and 1939.

Preliminary death rates for 1939 and final figures for 1938 for the Southwestern States follow:

	1939	1938
Arizona .....	14.2	14.6
New Mexico .....	14.1	14.1
Texas .....	9.8	9.8

## Special Section

# Arizona State Medical Association

PRESTON T. BROWN, M. D., *Associate Editor*  
403 Professional Bldg., Phoenix, Arizona

### COMMITTEE ON MEDICAL PREPAREDNESS

Dr. Charles S. Smith of Nogales has been named to serve with the American Medical Association Committee on Medical Preparedness. Dr. Smith was named to this important committee by Drs. D. F. Harbridge, President; W. Warner Watkins, Secretary, and W. Paul Holbrook, Chairman of the Council, as requested by the American Medical Association of these three state association officers.

The American Medical Committee will convene on July 19 for the purpose of outlining the duties of the state association committee representatives, after which time the full program will be put into effect in the various state associations. *The Journal of the American Medical Association* for June 22, page 2466, and again for July 13, page 137, carries full information as to the formation of the committee and its duties, with subsequent issues to report on the progress of the work. The Arizona membership will give full cooperation to this important work.

### POST-GRADUATE PEDIATRICS COURSE

For the past two and a half years the Arizona State Medical Association has cooperated with the Division of Maternal and Child Health of the State Department of Health in the interest of mothers and babies entitled to care under the Public Health Division. The physicians over the state have evinced such interest in this work that it is now possible for the Department of Health through the division named to extend a further service to the physicians participating in the MCH program of work. Since the inception of the work, eminent instructors in the fields of gynecology, obstetrics and pediatrics have been brought into the state to present refresher courses for all physicians interested in this type of public health activity. Interest in these programs has so increased that now, for the first time, post-graduate work in pediatrics is being offered the general practitioners over the state who have participated in the MCH work.

Following is the course being offered this summer at the University of California, the State Department of Health for Arizona defraying the travel and registration expense of physicians within the quota who may wish to take the course. While the first course will be under way when this article appears in the *Journal*, it is printed here in order that the profession as a whole may see the full scope of the work being done through the Division of Maternal and Child Hygiene of the State Department of

Health in cooperation with the Association Committee on Maternal and Child Health.

Opening Date—July 29, 1940.

Length of Course—Two weeks.

Place—School of Medicine, University of California, San Francisco.

In Charge—Dr. Amos Christie, Associate Professor in Pediatrics, Acting Head, Department of Pediatrics.

The Faculty—Members of the staff of the Department of Pediatrics.

Registration—The Arizona State Department of Health will pay the registration fee for the course and round-trip transportation of each registrant.

This practical course in preventive and clinical pediatrics is part of a series of post-graduate courses to be given at the School of Medicine, University of California, under the sponsorship of six western state departments of public health.

The material in the San Francisco Hospital and the University of California Hospital will be available for study and demonstration. Work on the point of view and special techniques in the conduct of well child conferences will be given. A syllabus of the lectures follows:

1. Introduction and purposes of course.
2. Review of infant feeding.
3. Hazards of the neonatal period and discussion of prematurity.
4. Congenital syphilis, early diagnosis and treatment.
5. Normal growth and development.
6. Heart disease in childhood.
7. Common communicable diseases and standard immunization procedures.
8. Common communicable diseases and standard immunization procedures.
9. Common communicable diseases and standard immunization procedures.
10. Common communicable diseases and standard immunization procedures.
11. Childhood tuberculosis.
12. Digestive disturbances; vitamin deficiency diseases.
13. Allergic diseases (subject to change).
14. Allowance in event of overlapping.

Key reference will be suggested and sufficient time allotted for reading. A seminar will be held each Saturday morning. The following is a tentative outline of a week's schedule:

MONDAY—	9-11—Ward Rounds U. C. Hospital 11-12—Lecture
	2- 4—Well Baby Conference
TUESDAY—	9-11—Children's Hospital 2- 4—Lecture Free
WEDNESDAY—	9-11—Ward Rounds S. F. Hospital 11-12—Lecture
	2- 4—Lecture Free
THURSDAY—	9-11—General Staff Rounds. U.C. Hosp. 11-12—Lecture
	2- 4—Well Baby Conference
FRIDAY—	9-11—Ward Rounds S. F. Hospital 11-12—Lecture
	2- 4—Free time to arrange
SATURDAY—	9-11—Seminar 11-12—Seminar



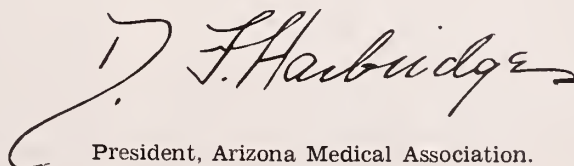
## President's Page

IN THE Arizona Section of the current issue of the *Journal* will be found an outline of a post-graduate course in pediatrics being offered the physicians of the state who have participated actively in the maternal and child health program under the direction of the Division of Maternal and Child Hygiene of the State Department of Health in cooperation with the Arizona State Medical Association.

For something over two years the Association has been in active cooperation with the Department of Health in this work, the present post-graduate course being a culmination of the great interest manifested in the work on the part of many of our members over the state. Response to the offer of this course has been beyond the expectations of all concerned, and the quota to take the course has been met. In fact, all desiring to take the course cannot be accommodated at this time, but will be admitted to future courses.

We point to this work to call attention to the increased interest of our membership in the various committee programs under way and developing. In later issues the work of other committees will be stressed. The committee directing the work of maternal and child health is comprised of: Dr. C. B. Warrenburg, obstetrician, Phoenix, chairman of the committee; Dr. Hugh C. Thompson, pediatrician, Tucson, and Dr. Preston T. Brown, obstetrician and gynecologist, Phoenix. The activities of this committee merit the continuous cooperation of the membership at large, which cooperation is responsible for the post-graduate course in pediatrics now being offered.

Faternally yours,

A handwritten signature in dark ink, reading "J. F. Harbridge". The signature is fluid and cursive, with a large initial "J" and a long, sweeping underline.

President, Arizona Medical Association.

## THE SIGNIFICANCE OF CONVULSIONS

(Continued from Page 239)

to the characteristics of the brain waves associated with convulsive states.

Animal experimentation has extended the knowledge of the effect of various drugs in raising and lowering the convulsive threshold. The neuro-surgeon makes maps of the motory and sensory areas of the cerebral cortex by stimulation with patients under local anesthesia. He also locates eleptogenous foci, and observes local circulatory changes in the brain during spontaneous and induced convulsions.

The clinician, who is forced with the problems of treating patients and explaining matters to their relatives, hopefully applies each newly proposed remedy, which never measures up to hopes and expectations. However, by the application of the accumulated knowledge concerning the factors affecting the convulsive threshold, and careful search for factors which tend to precipitate convulsions, a program can usually be worked out for each patient which will at least partially control the frequency and severity of recurrent convulsions.

University of Southern California School of Medicine, Los Angeles.

## COMMUNICATIONS

Sir:

In order that there may be a central source of information with regard to studies of the intravenous drip method of treatment of syphilis ("the five day treatment"), the American Social Hygiene Association at 50 West 50th Street, New York, has been asked to gather and to keep available information regarding this subject. The Association requests all physicians and hospitals which are planning or are now carrying on studies of experiments with this method of treatment of syphilis to send brief information regarding the following points to the Association at the above address:

1. Name of hospital or other institution.
2. Name of principal physician in charge of the intravenous drip study.
3. Type of case or cases of syphilis treated by the intravenous drip method.
4. Name of drug or drugs used.
  - (a) By the intravenous drip method
  - (b) By any other method before, during or after intravenous drip therapy. (Mention any specific therapy used.)
5. Routine laboratory work done on cases of syphilis treated by the intravenous drip method.
6. Usual number of hours of intravenous drip treatment per day per patient.
7. Usual number of days of intravenous drip treatment per patient.
8. Any other pertinent facts.

The Association will be glad, so far as possible, to answer inquiries regarding the intravenous drip treatment of syphilis. The Association has available to physicians, upon request, a brief pamphlet on the subject of the present status of the intravenous drip method of treatment of syphilis, written by Charles Walter Clarke, Executive Director of the Association and a member of the New York City Committee on the Intravenous Drip Treatment of Syphilis.

Very truly,  
The American Social Hygiene  
Association, Inc.

Sir:

With the likelihood of an augmented Army existing for a prolonged period, The War Department has been able to plan accordingly in considering medical requirements.

In reference to extended active duty for Medical Corps Reserve Officers, important changes have been made. Reserve Officers may now serve in Hawaii, Panama, and other United States possessions, and may receive yearly extensions of active duty for an indefinite number of years until the international situation clarifies and until the future can be viewed with more certainty.

Inclosed is a statement pertaining to extended active duty for physicians which probably will be of interest to your readers. Any publicity given to the substance contained therein will be appreciated by this office.

Very truly yours,  
JAMES E. BAYLIS,  
Colonel, Medical Corps,  
Executive Officer.

## NEWS

### General

The 19th annual scientific and clinical session of the American Congress of Physical Therapy will be held September 2, 3, 4, 5, and 6, 1940, at the Hotel Statler, Cleveland, Ohio.

The mornings will be devoted to our annual instruction course, enabling attendance at both the course and scientific sessions which will be given in the afternoons and evenings. This will minimize the time element and permit attendance at both functions during the same week. The seminar and convention proper will be open to physicians and qualified technicians.

Numerous new features will be manifest in the 1940 program. While every phase of physical therapy will be covered in the general program, special emphasis will be laid on the use of physical measures in general practice. Symposia dealing with light, heat and electricity as important therapeutic adjuvants in general medical and surgical practice



will appeal to every physician interested in modern therapy.

For information concerning the seminar and preliminary program of the convention proper, address American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago.

The next written examination and review of case histories (Part I) for Group B candidates of The American Board of Obstetrics and Gynecology will be held in various cities of the United States and Canada on Saturday, January 4, 1941, at 2:00 P. M. Candidates who successfully complete the Part I examinations proceed automatically to the Part II examinations held later in the year.

Applications for admission to Group B, Part I, examinations must be on file in the Secretary's office not later than October 5, 1940.

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted by the entire Board, meeting at Cleveland, Ohio, immediately prior to the 1941 meeting of the American Medical Association.

After January 1, 1942, there will be only one classification of candidates, and all will be required to take the Part I and Part II examinations.

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh, (6) Pennsylvania.

The tenth annual convention of the Biological Photographic Association will be held at the Hotel Schroeder, Milwaukee, Wisconsin September 12, 13 and 14. This society is interested in the further study of photography as applied to the biologic sciences, and the improvement of its technic. Scientific photographers from all parts of the country will meet to exchange ideas and information on still and motion picture photography as well as the latest developments in color work. Formal papers will be presented outlining new methods of technic, and there will be informal round-table discussions which will be especially instructive. Commercial firms specializing in the manufacture of scientific photographic apparatus and materials will exhibit. There will be exhibited natural color and monochrome prints of biologic and clinical subjects.

The membership of the Biological Photographic Association is composed of professional clinical and biologic photographers as well as physicians, dentists and scientists who are interested in this specialized branch of photography.

Further information concerning the convention program, salon specifications and membership in the society may be had by writing to the Secretary of the Biological Photographic Association, University Office, Magee Hospital, Pittsburgh, Pa.

Michael Reese Hospital announces a full-time intensive course in Electrocardiography, two weeks, August 19-August 31, 1940, by Dr. Louis N. Katz, Director of Cardiovascular Research.

This is an intensive course offered to the general practitioner. There will be practice on several electrocardiographic machines and discussion of the principles of their construction and use. There will be sessions of interpretations of electrocardiograms illustrated by lantern slides, and practice by the student with unknown records. Routine records taken during the time of the course will be discussed. Emphasis will be placed on chest leads and on the importance of the electrocardiogram in coronary sclerosis and myocardial infarction. The mechanism and interpretation of heart irregularities will be developed.

As group and individual instructions will be given, the course is open to both the beginning and advanced student in Electrocardiography. It is planned to individualize the course so that at the end of the period each student will be capable of taking and properly interpreting routine electrocardiograms. In order to accomplish this purpose the class will be limited in number. It is imperative, therefore, that reservations be made early.

For further information address:

Michael Reese Hospital,  
Cardiovascular Department,  
29th and Ellis Ave.,  
Chicago, Illinois.

The Twenty-fifth Annual Session of the American College of Physicians will be held in Boston, with general headquarters at the Statler Hotel, April 21-25, 1941.

Dr. James D. Bruce of Ann Arbor, Mich., is President of the College and will have charge of the program of general scientific sessions. Dr. William B. Breed of Boston has been appointed General Chairman of the Session, and will be in charge of the program of clinics and demonstrations in the hospitals and medical schools and of the program of panel and round table discussions to be conducted at the headquarters.

Plans for a Pan-American Congress of Ophthalmology to be held at the Hotel Cleveland, Cleveland, Ohio, October 11-12, have been announced.

The congress will be sponsored by the American Academy of Ophthalmology and Otolaryngology, which will hold its annual convention immediately preceding the Pan-American gathering.

The U. S. Department of State has expressed its interest and the governments of all the countries of the Western Hemisphere have been invited to send official delegates. It is felt that the meeting will do much toward bringing about an entente cordiale among scientific men of the two Americas, and it is expected that a permanent organization will be effected.

The committee that is developing the congress has the following members: Drs. Harry Gradle, Chicago; Conrad Berens, New York, and Moacyr E. Alvaro, Sao Paulo, Brazil. The executive secretary of the American Academy of Ophthalmology and Otolaryngology, which will be host to the Latin-

American eye specialists, is Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Neb.

Under the direction of Dr. Berens, papers in Spanish or Portuguese will be made understandable to English speaking ophthalmologists by the use of lantern slides projecting a synopsis of each paragraph translated into English. The reverse process will be used with the English papers. Spanish and Portuguese stenographers will be present to record the discussions in the language of the authors.

The congress is open to any ophthalmologist who wishes to register. Non-members of the Academy of Ophthalmology and Otolaryngology may register regardless of attendance at the Academy meeting proper. Individual invitations have been sent to about 1,800 members of the ophthalmologic profession in the Latin-American countries, as well as to the national societies of eye specialists and the universities. Individual invitations were not sent to ophthalmologists in the United States and Canada, but official invitations to them are being printed in the various journals of ophthalmology. A fee of \$5 has been set for membership in the congress.

### *El Paso*

The regular monthly Staff Meeting and dinner of the Southwestern General Hospital was held Thursday, May 30, 1940, at 6:30 P.M. in the hospital auditorium. The program was: "Case Report" by Dr. T. J. McCamant.

A regular Staff Meeting of the Hotel Dieu Sisters' Hospital was held June 4, 1940, at 12:10 P.M. in the auditorium of the Nurses' Home. Luncheon was served. The program was as follows:

"The Necessity for Cesarean Section"—Dr. H. Leigh.

Discussion—Dr. F. A. Snidow.

"A Case of Gunshot Wound. The Use of Sulfanilamide in Compound Fractures"—Dr. Louis Breck.

Discussion—Dr. J. L. Stowe.

A regular meeting of the City-County Hospital Staff was held Wednesday, June 26th, 1940, at 6:30 P.M., at City-County Hospital. The program was as follows:

"Case of Large Ovarian Cyst"—Dr. C. H. Sullivan.  
Discussion by Dr. J. L. Green.

"Case of Brain Tumor"—Dr. T. H. Crouch.

Discussion by Drs. J. E. Morrison and P. E. McChesney.

Autopsies—Dr. W. W. Waite.

A regular meeting of the City-County Hospital Staff was held Wednesday, July 17, 1940, at 6:30 P.M., at City-County Hospital.

The program was as follows:

"Case of Large Ovarian Cyst"—Dr. J. L. Green.

Autopsy by Dr. W. W. Waite.

"Case for Diagnosis"—Dr. W. H. Stephenson.

Discussion by Dr. S. H. Newman.

Autopsy by Dr. W. W. Waite.

## MISCELLANY

### DISEASE OF THE CERVICAL LYMPH GLANDS

#### 1. Lymphadenitis (inflammation)

Acute:

Acute suppurative (septic)

Staphylococci and streptococci

Tuberculosis

Acute nonsuppurative

Toxic—rheumatic infection, exanthemata (measles), pediculosis

Syphilis—primary and secondary

Infectious mononucleosis

Chronic:

Chronic foci of infection

Tuberculosis

Syphilis

Fungus

#### 2. Secondary neoplasm

Carcinoma

Sarcoma (melanosarcoma)

#### 2. Lymphoblastoma (either infection or tumor)

With characteristic blood changes

Leukemia—acute and chronic

Lymphatic

Monocytic

Myelogenous

Without characteristic blood changes

Hodgkin's disease

Lymphosarcoma

Reticulum cell sarcoma

—Penn. Med. J.

### FIVE-DAY SYPHILIS "CURE"

It is still too early for excessive optimism concerning the five day cure of syphilis recently announced by a group from Mt. Sinai Hospital. Those of us whose memories go back far enough, remember Friedman's turtle serum for tuberculosis, Ehrlich's "Therapia Sterilisans Magna"—the original salvarsan, and the gold cure for tuberculosis, as well as many others. There have been preliminary reports in scientific medical journals, but no report of the complete work of the Mt. Sinai group has been published, although we can form some judgment from the lay press accounts of the meeting at which the results were presented.

The drug of choice seems to be mapharsen and the method of administration is by continuous drip for twelve hours out of each twenty-four for five days. The results apparently are startling. Nearly all of the patients seem to have been cured.

There can be no question concerning the quality of the work and of the observations. Suffice it to say that the investigations have been under the immediate direction of Dr. George Baehr and Dr. Louis Chargin, neither of whom is prone to going



off "half-cocked." Their experiments have been limited to the treatment of early syphilis, and if their results can be matched at other institutions we can truly say that one of the greatest forward steps in both clinical and preventive medicine has been made.

The implications of this form of treatment are many and widespread. If early syphilis can be cured within a few days there will be much less late syphilis to treat; one of the great causes for mental disease in late years will be abolished; the costs to the taxpayers both for treatment of patients with syphilis per se and for the custodial care of these same patients with late manifestations of the disease will be cut enormously; congenital syphilis need no longer be a problem, while last but by no means least, active sources of infection will disappear with a constant rapid reduction in the incidence of new cases of the disease.

*On the other hand, we cannot refrain from expressing a note of warning. Certainly at this time this type of treatment should be attempted only by those who have studied the method carefully; it can be undertaken only in a hospital where there is a well trained professional staff and adequate laboratory service to make such examinations as may be necessary. It is not a scheme of treatment to be used by the practitioner or even by the specialist in his office.—Westchester Med. Bull.*

### ILLEGAL PRACTICE

The committee has enumerated 12 flagrant forms of outlaw practice which should be curbed.

1. Diagnosis, treatment, prescribing, and dispensing by druggists and clerks.
2. The illegal practice of medicine by chiropractors, chiropodists, and podiatrists.
3. The illegal practice of medicine by foreign groups, such as "Chinese healers," "Polish barbers," etc.
4. The practice of dermatology in beauty parlors.
5. The practice of physical therapy in bathing establishments without medical supervision.
6. The diagnosis of disease by physical therapists.
7. Corporate medicine as practiced by utility groups and department stores.
8. The treatment of diseases of the eye by opticians.
9. Prescribing and diagnosing by psychologists and lay psychoanalysts.
10. Diagnosis and treatment by naturopaths and food faddists.
11. The practice of medicine by reducing groups and clinics.
12. The performance of eye examinations by motor vehicle inspectors.

*N. Y. State J. of Med.*

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CHOCOLATE - FLAVORED EMULSION  
OF LIQUID PETROLATUM!

TASTES LIKE THE CHOCOLATE IN A  
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☐ Plain

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State \_\_\_\_\_

### ERRORS IN DIAGNOSIS

- (1) Incomplete Examination:
  - (a) Because the diagnosis seems obvious
  - (b) Because a certain diagnosis seems likely
  - (c) Because the patient is old, infirmities are taken for granted
  - (d) Because of fear of offending the sensibilities of the patient
- (2) Unfamiliarity with the Disease in Question
- (3) Failure to Consider all the Possibilities
- (4) Incomplete History
- (5) Improper Evaluation of Symptoms
- (6) Pain of Uncertain Origin
- (7) Lack of Knowledge
- (8) Classification of Obscure Conditions as Neurosis

#### Summary:

(1) Don't take anything for granted; (2) Take a careful history; (3) Make a complete physical examination; (4) Consider all possibilities; (5) Think of the commoner conditions first but don't overlook the rarer ones; (6) Weigh all evidence carefully; (7) Do laboratory work freely, but do not depend solely on the laboratory for a diagnosis; (8) The clinical picture is still the most important factor in formulating a diagnosis; (9) Seek greater knowledge and wider experience; (10) Think of the patient first, last and all the time.—*Ohio State Medical Journal*.

### DIAPHRAGMATIC HERNIA (53 Cases)

Symptoms	Number of Cases	Per Cent
Postprandial distress or pain.....	48	90
Substernal distress or pain.....	43	81
Upper abdominal distress or pain....	37	70
Nocturnal distress or pain.....	35	66
Alkali relief .....	33	62
Vomiting .....	28	53
Heartburn .....	27	51
Bloating and belching .....	25	47
Weakness .....	23	43
Dyspnea, palpitation, tachycardia or cough .....	22	42
"A lump in lower throat" or dysphagia .....	14	26
Hunger pain .....	12	23
Anemia .....	12	23
Hematemesis .....	11	21
Tarry or black stools.....	9	17
Loss of Weight .....	8	15
Overweight .....	6	11
Constipation' .....	6	11

—Rev. Gastroenterol.

### MEDICAL PREPAREDNESS


The state of Europe has forcibly reminded us of the readjustments necessary to adapt a large civilian population to the economy of war. The medical profession, in time of war, has thrust upon it suddenly, problems which do not ordinarily exist, and it, too, must readjust itself to meet them. War

medicine and war surgery require special organization; centers for research must be established so that the biology, pathology, and treatment of war wounds and other conditions can be studied. The war in Spain has given us many basic ideas concerning prophylactic excision, preoperative transportation, and immobilization by means of plaster casts for all wounds of the extremities.

Then, too, the manner in which war is waged today has so far been vastly different from the World War. This difference raises the question whether the means for administering medical care and evacuation to the rear, which were in use twenty years ago, will suffice in this newer method of warfare. In the realization that our country must now embark upon a vast program to prepare ourselves, the medical aspects of war assume an important place in the minds of civilian physicians who, in an emergency, will be called upon to bear the brunt of the work, under the supervision of trained army and navy medical personnel. It would seem in order, therefore, that some means be made available to keep doctors informed of current war medicine as part of the preparedness program, and that it be done as soon as possible.—*N. Y. State J. M.*

### PRAYER OF THE PHYSICIAN

O God, I pray that I may have absolute intellectual honesty. Let others fumble, shuffle and evade, but let me, the physician, cleave to the clean truth,

*Behind*  
**MERCUROCHROME**  
 (dibrom-oxymercuri-fluorescein-sodium)  
 *is a background of*

Precise manufacturing methods insuring uniformity

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4. Leukocyte

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Since its introduction decided advances have been made in improving the synthesis of Neoarsphenamine. Minimal toxicity, rapid and complete solubility, and meticulous ampuling are among the features that have made Neoarsphenamine Merck an excellent and widely specified arsenical. When sprinkled upon the surface of the water, Neoarsphenamine Merck goes into solution immediately. None of the powder reaches the bottom of the container, and no agitation is required.

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assume no knowledge I have not, and claim no skill I do not possess.

Cleanse from all credulities, all fatuous enthusiasms, all stubbornness, vanities, egotism, prejudices, and whatever else may clog the sound processes of my mind. These be dirt; make my personality as aseptic as my instruments.

Give me heart, but let my feeling be such as shall come over me as an investment of power, to make my thoughts clear and cold as stars, and my hand skillful and strong as steel.

Deliver me from professionalism, so that I may be always human, and thus minister to sickly minds as well as to ailing bodies.

Give me a constant realization of my responsibility. People believe in me. Into my hands they lay their lives. Let me, of all men, be sober and walk in the fear of eternal justice. Let no culpable ignorance of mine, no neglect, nor love of ease, spoil the worth of my high calling.

Give me the joy of healing. I know how far short I am of being a good man, but make me a good doctor. Give me that love and eagerness and pride in my work, without which the practice of my profession will be fatal to me and to those under my care.

Give me a due and decent self-esteem that I may regard no man's occupation higher than mine—envying not the king upon his throne, so long as I am prime minister to the suffering.

Deliver me from playing at precedence; from

hankering for praise and prominence; from sensitiveness, and all like forms of toxic selfishness.

Give me money; not so little that I cannot have the leisure I need to put quality into my service; not so much that I shall grow fat in head and leaden in heart, and sell my sense of ministry for the flesh-pots of indulgence.

Give me courage, but hold me back from overconfidence.

Let me so discharge the duties of my office that I shall not be ashamed to look any man or woman in the face. Grant that when, at death I lay down my task, I shall go to what judgment awaits me, strong in the consciousness that I have done something towards alleviating the incurable tragedy of life. Amen.

—Calif. and W. Med.

## BOOK NOTES

(NOTE: Book Notes, "Biochemistry of Disease" and "Hot Irons, Heraldry of the Range," which appeared in the June issue should have been credited to O. H. B. instead of D. F. H.)

SYNOPSIS OF OBSTETRICS: by Jennings C. Litzenberg, M.D., F.A.C.S., Professor Emeritus of Obstetrics and Gynecology, University of Minnesota Medical School. Pp. 394, including index. 157 illustrations. Fabrikoid. Price \$4.50, St. Louis, C. V. Mosby Co.

This is another in the series of synopses being brought out by Mosby. As has been the case in other volumes in this group, this book is rather complete in spite of its size, is very well written, is to the point, and is a working reference. No windy

# SILVER PICRATE

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HAS SHOWN A CONVINCING RECORD\* OF EFFECTIVENESS IN ACUTE ANTERIOR URETHRITIS

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\*"Treatment of Acute Anterior Urethritis with Silver Picrate," Knight and Shelanski, AMERICAN JOURNAL OF SYPHILIS, GONORRHEA AND VENEREAL DISEASES, Vol. 23, No. 2, pages 201-206, March, 1939.

JOHN WYETH & BROTHER, INCORPORATED, PHILADELPHIA, PA.



argumentation or theorizing are to be found here. Through a rich experience in his work the author presents the facts as he has found them, leavened of course by the work of others, as must be the thinking of all progressive men of medicine. The book is very much worth while. —M. P. S.

**ESSENTIALS OF THE DIAGNOSTIC EXAMINATION:** by John B. Youmans, M. D., Associate Professor of Medicine and Director of Postgraduate Instruction, Vanderbilt University Medical School. Pp. 417, including index. 36 illustrations. Fabrikoid. Price \$3.00. New York, The Commonwealth Fund.

This is a compact hand book containing in brief form most of the known diagnostic procedures needful in a careful and thorough examination. It

is written for the general practitioner, is quite practical, is based on common sense and a deep knowledge of underlying pathology. The book is small, easily read, well indexed. It could well find a place in the physician's bag, where it might well be consulted very frequently. The Commonwealth Fund has done the family doctor a distinct service in publishing this excellent reference text.—M. P. S.

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Vacations are too often a vacation from protective foods. For optimum benefits a vacation should furnish optimum nutrition as well as relaxation, yet actually this is the time when many persons go on

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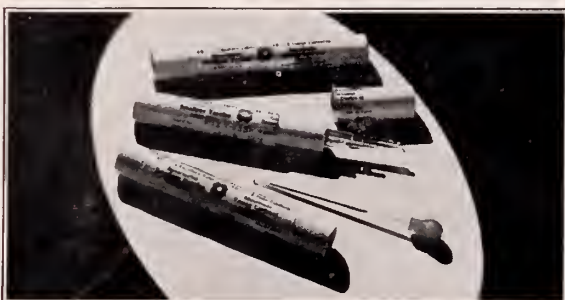
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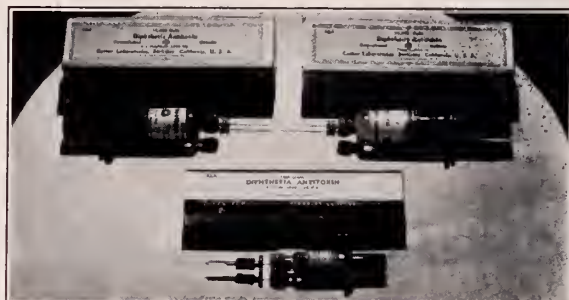
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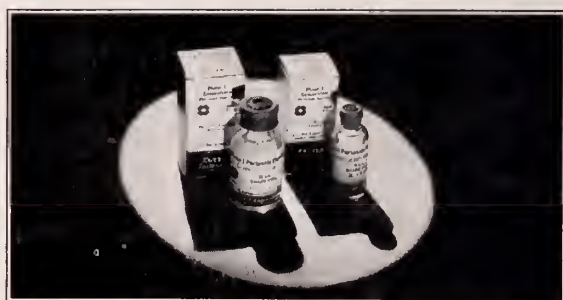
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VOL. XXIV

EL PASO, TEXAS, AUGUST, 1940

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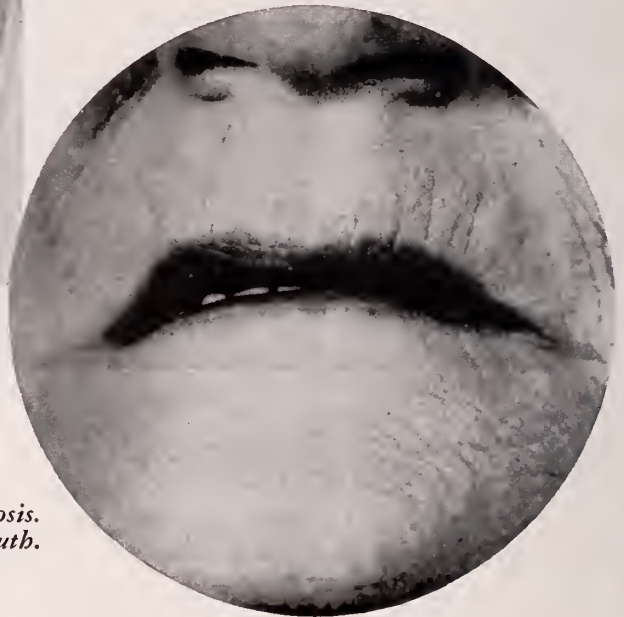


This page is the eighth of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A full color, two-page insert on the same subject appears in the July 20 issue of The Journal of the American Medical Association.



*Coexisting riboflavin deficiency and pellagra, showing cheilitis and the characteristic glossitis.*

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*The cheilitis of ariboflavinosis. Note fissures at angles of mouth.*

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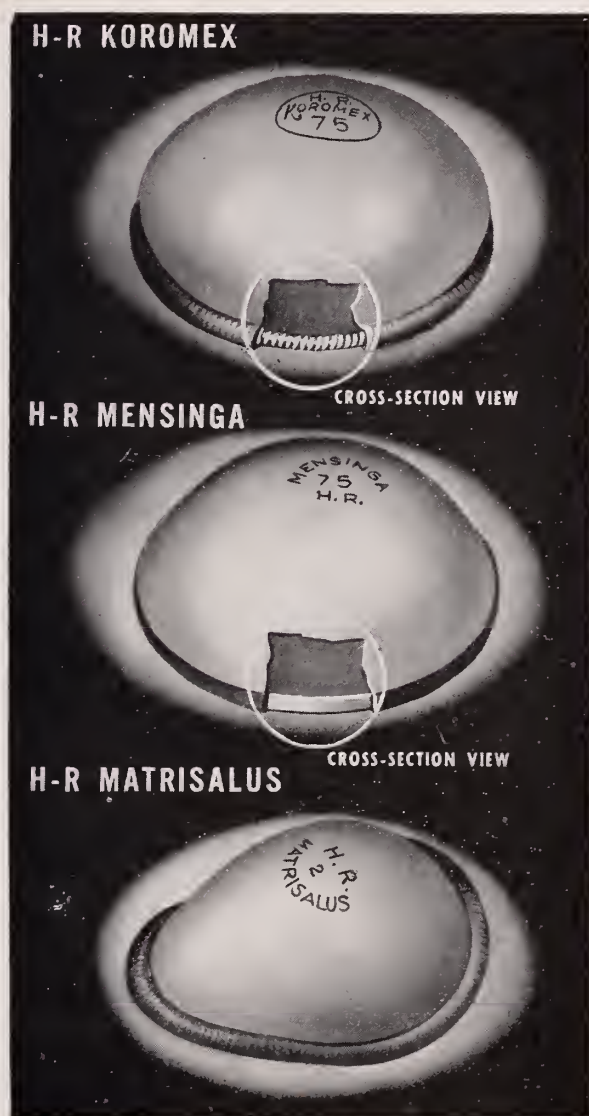
**T**HE most prominent lesion of riboflavin deficiency is a cheilitis characterized by reddening of the lips due to exfoliation of the epithelium, and radiating fissures at the angles of the mouth. There may also be seborrheic lesions in the nasolabial fold and on the alae nasi. According to Krause, Sydenstricker, Sebrell, and

Cleckley, riboflavin deficiency produces a magenta color of the tongue. As stated by these investigators, when riboflavin and nicotinic acid deficiencies occur in the same individual, the fiery red tongue of pellagra may change under the influence of nicotinic acid to a magenta color which disappears only after riboflavin therapy.





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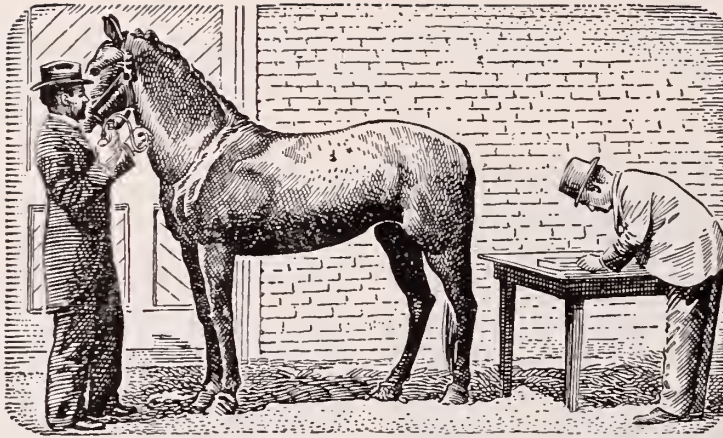
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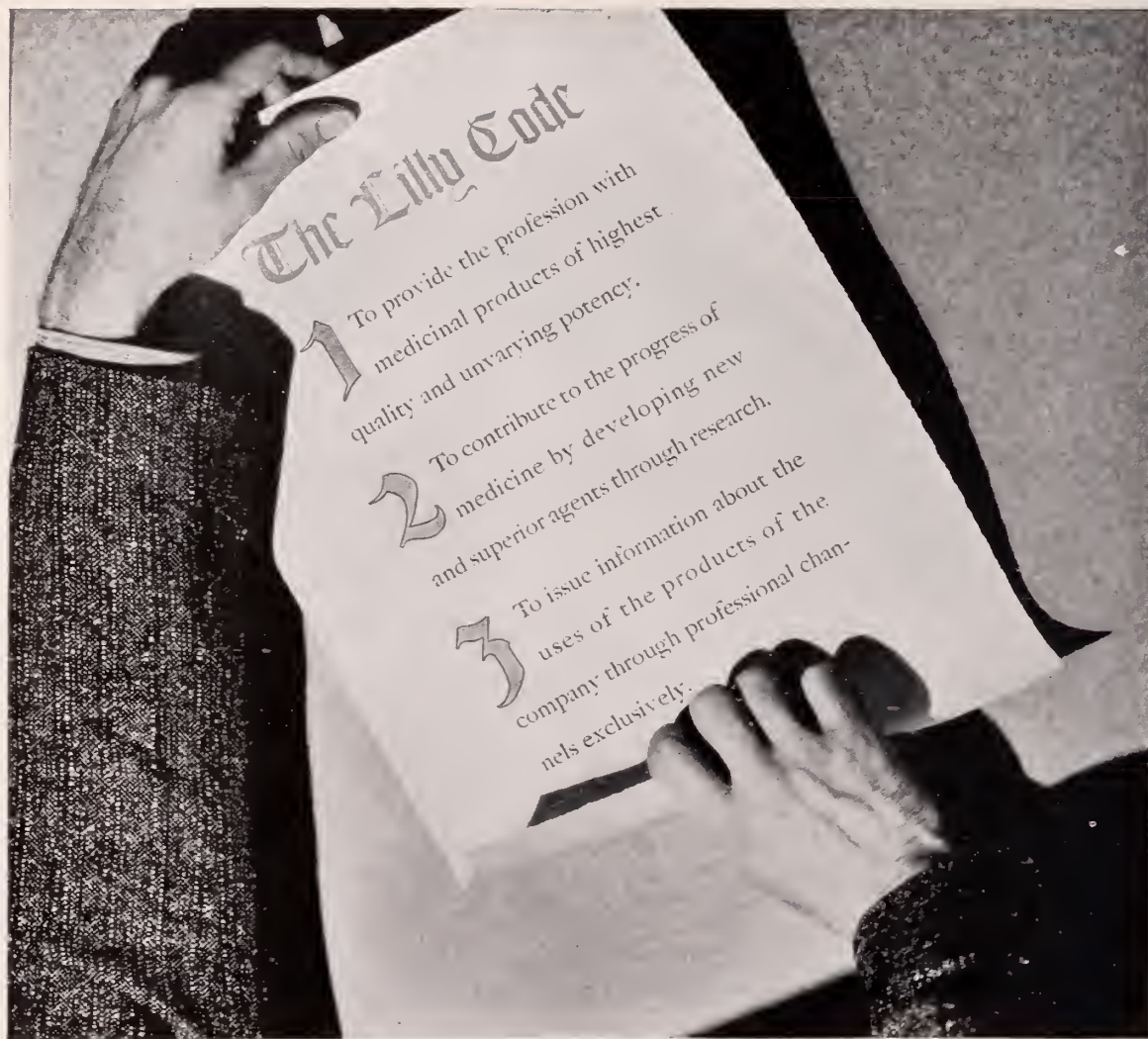
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## A Practical Procedure in Treatment of Fistulas of Small Intestines\*

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EVERY surgeon is familiar with the seriousness and devastating effects of high intestinal fistulas, which rapidly jeopardize the life of the patient, and, in a too high percentage of cases, lead to death. The reasons for such a high mortality are fairly well understood, and much has been written in the literature concerning the procedures of combating the serious effects of such conditions. Also, it is universally admitted that the higher the fistulous opening in the intestines, the more rapidly death ensues, if appropriate steps are not taken to combat its effects.

The alarming local and general symptoms occurring in high intestinal fistulas revolve around one factor; namely, the loss of continuity of the intestinal tract. This loss of continuity brings about two conditions, either of which will lead to death. The first is the loss of contents of the upper intestines that are so essential to the body economy. Many of these contents, such as inorganic salts, bile acids, pancreatic juice, enzymes, water, etc., and, most important of all, the naturally digested food products that would be reabsorbed in the lower gut tract. There may be also some factors that play a role in the metabolism of vitamins that is lost. It is thus evident that this condition must lead to serious consequences. Certain salts, water and nutrient products can be administered intravenously or subcutaneously, but by these means strength or even life cannot be maintained indefinitely, and, at best, this method of replacing the function of the small intestine is inadequate.

An intestinal fistula leads still more rapidly to death if there is an obstruction below the fistula opening. The reason for this is a total loss of intestinal contents instead of only a partial loss, such as there would be in cases in which there is no obstruction below the fistulous opening. This fact, as well as the importance of its early recognition, has been pointed out by several writers.<sup>2</sup>

Equally dangerous and disastrous, and well known, is the second condition that results from

the interrupted continuity of the small intestine in high intestinal fistulas, in addition to the unrelenting pain and discomfort suffered by the patient. This condition is the irritating and digestive action of the intestinal fluids when the contents of the small intestines come in contact with the tissues of the body which do not possess natural immunity to their action. The progress of this destructive process on the skin and tissues of the abdominal wall is in direct proportion to the proximity of the fistulous opening to the pylorus. The higher the opening the more rapid this process becomes effective. It is therefore necessary for the surgeon to recognize this condition as soon as possible if the opening is near the pylorus.

At first, one may notice only a small amount of drainage from the wound, but a reddening of the surrounding skin which is more marked than normal. In 24 hours the separation of the wound borders becomes much larger, due to the autogenous digestion of the tissues. The area of redness extends and the discharge increases. Very soon the discharge becomes abundant and the skin around the opening assumes a vivid red color. The skin over the remainder of the abdomen also is now reddened and begins to ulcerate. The intestinal discharge, at first only intermittent, becomes continuous, and many times the patient screams out in pain with each peristaltic discharge of the intestinal juices. The patient's loss of weight increases noticeably from day to day, and, consequently, one sees sunken eyes and bulging cheek bones, due to dehydration. The pulse becomes quickened and a peculiar pallor develops. Infection now sets in and adds to the toxemia. The above processes, once in operation, develop rapidly, and they are continuous unless steps are taken quickly to correct the local injurious drainage and to restore the normal processes. There is so swift a development of the local and general symptoms that when operation is contemplated the surgeon is presented with a patient who is not in a condition to withstand even a minor operation, much less laparotomy and intestinal resection or anastomosis that is usually necessary to restore the intestinal

\*Read before Arizona State Medical Association, Tucson, April 18-20, 1940.

†Deceased.

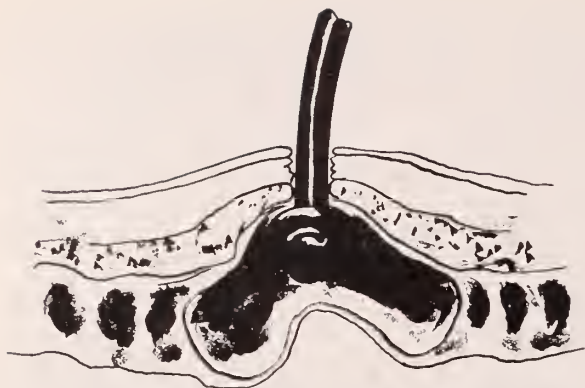


Fig. 1. The above figure shows a Pezzer catheter in place. The catheter is introduced by means of a stylet, and traction is applied, thereby pulling the mushroom portion of the catheter against the lumen of the bowel. This may work very well in selected cases.

continuity and bring this vicious process to a favorable termination.

Therefore, it will be the purpose of this paper to add to the method of treatment a practical procedure that may help at times to lower the mortality in high intestinal fistulas, but it is not within the scope of this paper to discuss the general supportive measures that should be taken in the treatment of fistulas of the small intestines where it is of the greatest importance to consider carefully the problems of nutrition and fluid balance.

To mention first a few of the procedures that have been suggested in order to correct the local condition of the abdominal wall, Potter<sup>2</sup> proposed the prone position on a Bradford frame. He believed that in this way the intestinal content would be prevented from collecting on the surface of the abdomen. Many substances, such as zinc oxide, kaoline and various other protective powders, have been used locally. Also, one-tenth normal hydrochloric acid packs and drips have been recommended in order to inactivate the intestinal enzymes. We have used these methods and find them very effective in preventing extensive autogenous digestion of the tissue. However, it will be noted that the above procedures do not prevent the loss of intestinal contents, but merely relieve, or attempt to relieve, the secondary local condition. A different method consisting in continuous aspira-



Fig. 2. The above figure shows an empyema tube with a large catheter inserted into the lumen of the tube.

tion was first reported by Cameron.<sup>3</sup> Furthermore, artificial closure by various means has been reported in literature. Packing the opening with chewing gum, Beck paste and gauze soaked in olive oil have been tried with variable success. It seems to us that one of the most rational methods is that reported by Hartzell,<sup>4</sup> in which he used a rubber disc, which was inserted in the lumen of the bowel and pulled against the opening by a suture which passed to the outside. He maintained slight traction on this disc by anchoring the suture to the abdominal wall with adhesive tape. When the fistula had very nearly healed he cut the suture and the rubber disc dropped back into the bowel. Where there is much ectropion of the mucous membrane, the closure is much slower.

In the case we wish to report, we tried at first a Pezzer catheter and pulled the mushroom portion of it against the opening. This, however, would not stand much traction and would slip out. The Pezzer catheter can be used to an advantage, though, if the opening is not too large (Fig. 1).



Fig. 3. This shows the inner flanges of the empyema tube rolled up and being inserted into the fistulous opening.

We then used a Wilson empyema tube (Fig. 2). One of the flanges of the tube was rolled up and inserted through the opening into the lumen of the bowel (Fig. 3). A large catheter was then inserted through the opening in the empyema tube. The catheter was of such size as to fill the lumen of the tube snugly. The flange of the empyema tube was then pulled against the lumen of the bowel, either by slight traction on the catheter or by placing gauze under the outside flange (Fig. 4). The catheter was connected with a tube which lead to a bottle standing at the side of the bed. When the patient was lying on his side, the weight of the tube leading to the bottle exerted sufficient traction. If there was too much drainage, the excess material discharged could be reintroduced through the catheter into the intestines, thus conserving the high intestinal contents.

It is remarkable how fast the local lesions heal if



the intestinal contents are prevented from spreading over the abdominal wall, and it is equally amazing to see how rapidly the general condition of the patient improves under these conditions. Within a few days he can be transformed into a person fairly able to stand a surgical operation. This improvement is due solely to the restoration of the intestinal continuity for only a few days. When the patient has recovered sufficiently, he is taken to the operating room and the empyema tube is removed. The opening is closed by suture, so that a laparotomy can be undertaken without much danger of a peritonitis being caused by the operation.

#### CASE REPORT

The following is a report of a case treated by the method described above.

Case No. 41820—Mr. C. P., white, male, age 49. This patient was first seen and examined by us on February 9, 1938, at which time he presented the typical picture of an acute intestinal obstruction. He was operated the same day and a mass was found which produced an obstruction in the ileocecal region. He also had a marked lymphadenopathy of the right side of the abdomen. A gland was taken for biopsy and an ileocolostomy was done. He made good recovery with the exception

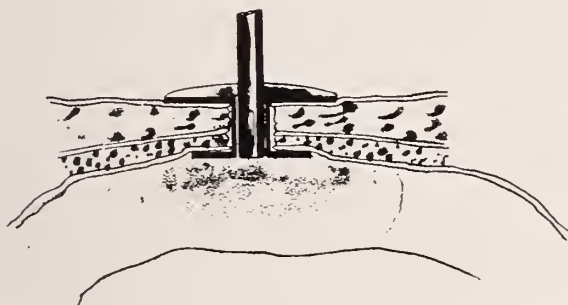


Fig. 4. The above shows a diagram of the tube in place. The outer flange does not necessarily fit against the skin as represented. Gauze may be packed under this outer flange to exert traction on the inner flange. Traction on the inner flange may also be obtained by pulling on the catheter or outer flange.

of a wound infection which was not serious. As there was some question as to the mass being a carcinomatous metastasis, he was given two series of deep x-ray treatment. Following this, he remained well except that he developed a hernia at the point of the incision.

He was seen by us again on April 17, 1939. At that time he presented the picture of intestinal obstruction and he was operated immediately. This time the intestinal obstruction was due to an adhesive band across the proximal ileum. There was no growth visible or palpable in the abdomen. An intestinal resection was done for the removal of gangrenous bowel, and an end-to-end anastomosis was carried out.

On the sixth day following operation he developed an intestinal fistula which began to erode the wound and the abdominal wall. Food or liquids would appear at the opening within 5 to 10 minutes after it had been taken by mouth. Hydrochloric acid packs helped very much, but the patient continued to decline in strength very rapidly. Various attempts were made to close the opening. The patient was given transfusions and intravenous therapy. A Pezzer catheter was then used in the way we described, but the opening was too large, and



Fig. 5. The above figure shows the special traction catheter with the balloon disc deflated.

when traction was exerted the catheter was pulled out.

Finally it was decided to use the empyema tube in the manner described above. The excoriations and ulcers of the abdominal wall healed rapidly and the patient's general condition improved from day to day. All the material that drained from the tube was reintroduced into the intestines through the catheter, and thus the loss of the intestinal contents was prevented.

On July 22, 1939, he was taken to the operating room and a laparotomy was done. The adhesions were freed and a bowel resection was carried out in the area of the fistulous opening. He made an uneventful recovery, and when last seen, February 21, 1940, he was well.

#### COMMENT

We think this patient's life unquestionably was saved by a simple procedure that restored the intestinal continuity temporarily. This restoration of continuity allowed the local lesion to heal, and, at the same time, his metabolic processes became normal again. He was transformed in a few days from a poor surgical risk to a moderately good one.

Since the writing of this paper we have had a special catheter made that may be more efficient in some future cases than the empyema tube. See Figs. 5 and 6. It will be noted in Fig. 5 that there



Fig. 6. This figure shows the disc inflated.

is a disc near the catheter tip. This disc is a balloon, which, when deflated as in Fig. 5, can be inserted through a fistulous opening by the aid of a stylet. After the collapsed disc has reached the inside of the bowel lumen, the disc is inflated with water, which prevents it from slipping through the fistulous opening when traction is put on the catheter. In Fig. 6 the disc has been inflated through the small side arm of the catheter.

### CONCLUSIONS

1. A practical method has been described which may be useful at times in the treatment of high intestinal fistulas.

2. If there is an obstruction below the fistulous opening it is not advisable to await the complete healing of the local lesions, but the application of the above mentioned procedure for a period of 48-72 hours may be helpful.

3. The intestinal contents that drain from the catheter may be reintroduced into the bowel if there is no obstruction below the opening.

4. The loss of intestinal continuity is the main factor in the mortality in cases of high intestinal fistulas.

926 East McDowell.

We wish to express our appreciation to Dr. M. L. Day for his helpful suggestions in working out this special catheter, and also to the C. W. Bard Catheter Company for their cooperation in manufacturing this special catheter.

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## Cancer of the Stomach

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DEATHS from cancer of the stomach assume large proportions. It is estimated by Eusterman that probably one-third of all deaths from cancer are due to malignant growths of the stomach. It seems probable that last year there were about 160,000 deaths in the United States from cancer, and this would make about 53,000 deaths from cancer of the stomach alone.

It is generally acknowledged that the only cure for gastric cancer is excision. Except in lymphosarcoma and small round cell cancer, irradiation has but little if any beneficial effect upon gastric malignancy. The point is that the diagnosis must be made early, and this depends upon two things: (1) the education of the public, and (2) the promptness of action of the general practitioner. Many cases are inoperable when first seen by the surgeon. The pity of it is that if they had come earlier an operation would have given an excellent chance of cure. The education of the public has aided in securing an early diagnosis of cancer in many regions, as in cancer of the colon, and it should also be helpful in cancer of the stomach.

Sir James MacKenzie's chief work in the latter years of his life was devoted to the study and recognition of the early symptoms of disease. We must glorify what often seems a casual and immaterial symptom or sign in order to find a clue to something that may prove to be malignancy.

### SIGNS AND SYMPTOMS

The symptoms of cancer of the stomach are not pathognomonic. When the diagnosis is obvious, frequently it is too late for a cure. The symptoms given in most of the textbooks are often confusing and sometimes actually misleading in making a

diagnosis. Gaither (Gaither, E. H.: *Gastric Carcinoma: A Clinical Research. Preoperative Course and Postoperative Results. Sou. Med. Jour.*, 28:107, 1935) has given an excellent analysis of 245 cases of gastric carcinoma demonstrated by operation and treated at Johns Hopkins Hospital during a period of 10 years. The symptoms are not infrequently remittent or intermittent, just as in peptic ulcer, and the fact that they sometimes entirely disappear is by no means an assurance that the lesion is benign. Among other fallacies, according to Gaither, are the following: "(a) Local gastric symptoms, loss of appetite, cardialgia, eructation, pylorus, nausea, vomiting, pain, distention, and variable types of discomfort are no worse in beginning carcinoma than in other gastric disease. (b) A latent stage is possible during which time the process advances very slowly, with an utter absence of symptoms. (c) A general marasmus, or a variable anemia, may occur, with the gastric symptoms so wholly in abeyance as to be quite unrecognizable. (d) A beginning carcinoma may progress without definite symptoms; again, it is marked by ulcer symptoms, or symptoms of chronic gastric catarrh."

Cancer of the stomach is often supposed to be accompanied by pain. If the cancer is in the so-called "silent" area of the stomach; that is, along the greater curvature to the left of the incisura or in the cardiac portion of the stomach, there are no symptoms whatever unless there is bleeding, obstruction or perforation. Fortunately, however, the majority of cases of cancer of the stomach appear near the pylorus or in the main portion of the body of the stomach, and here symptoms of indigestion, "waterbrash," "heartburn," discomfort, nausea or vomiting may often occur months before the lesion becomes very far advanced. Pain when present may vary. It may be sharp and cramp-like, or a boring, gnawing pain. Or there may be

(From the Surgical Department of St. Elizabeth's Hospital, Richmond, Virginia.)

Read before the Arizona State Medical Association, at Tucson, April 18, 1940.



only a moderate discomfort. It is usually in the upper epigastric region. The pain may be intermittent and relieved by food, or it may be continuous. When intermittent pain relieved by food gradually becomes continuous it is supposed to be suggestive of cancer of the stomach, but this symptom may also be found in a benign peptic ulcer that has slowly perforated and has formed adhesions around it.

There is a marked difference in symptoms in different patients caused by the same lesion. Libman (Libman, E.: Observations on Individual Sensitiveness to Pain. *J. A. M. A.*, 102:335, 1934) has called attention to this. Thus, in the hyposensitive, either no symptoms may result from a gastric lesion that would cause marked indigestion in the hypersensitive, or there may be substituted symptoms referred, for example, to the chest. Anorexia may be frequent, but it is by no means present in all cases. In the early stages of gastric carcinoma, the appetite may be quite variable, and the patient may actually gain weight. Nausea and vomiting are common, although often there is no vomiting unless later in the disease unless obstruction exists. Lesions along the lesser curvature particularly may be unaccompanied by vomiting throughout the course of the disease. The vomiting of blood is infrequent in cancer of the stomach. Probably not more than 5% of cases of gastric cancer actually vomit blood in any considerable amount, whereas in 20% of peptic ulcers there is distinct hematemesis or melena. Occasionally, however, vomiting of a small amount of coffee-ground-like material occurs, but even this is not as common in gastric cancer as it is supposed to be. A much more common sign is occult blood in the stool, which can be determined by the guaiac or benzidine test after a 3-day meat-free diet, or the string test of Einhorn may show blood.

Only about 50% of gastric cancers have decided ulceration. Tarry stools are rather infrequent, but occult blood may be found in many cases in which neither hematemesis nor tarry stools are obvious. Loss of weight is common, but it should not be too much emphasized, since it is usually a late symptom. Anemia is often present, although this, too, may be a late symptom. However, it may arise from a large fungating cancer of a colloid type and low grade of malignancy or from a malignant polyp, and does not necessarily indicate that the disease is inoperable.

Examination of the gastric contents may be suggestive, but it must not be too greatly valued. Most cancers of the stomach, particularly if well advanced, show achlorhydria, or at least a diminished amount of acid in the gastric juice, and this finding along with clinical symptoms suggesting gastric cancer must be given full weight. There are, however, two conditions that must be considered in connection with this. The first is that achlorhydria is more common than it was formerly supposed to be, and seems to increase with advancing years. It is difficult to imagine that millions of

cells in the stomach whose chief function is to secrete acid can remain entirely functionless indefinitely without some histologic lesion, though in many cases of achlorhydria in patients who die of something else microscopic examination shows but little if any alteration of the gastric structure. Achlorhydria may be a sequence of a low-grade chronic gastritis, which in itself from irritation may favor cancer. Indeed, Hurst believes that gastritis is the precursor of cancer in about 75% of cases (from Comfort, M. W., and Butsch, W. L.: *Proc. Staff Meetings, Mayo Clinic*, 13:151-154, March 9, 1938).

The second consideration is that while it is well known that duodenal ulcers are more likely to be accompanied by increased acid in the gastric juice than gastric ulcers, early gastric cancer often does not materially disturb the ratio of acid in the stomach any more than would a gastric peptic ulcer. More cases are being reported of cancer of the stomach in patients who had pernicious anemia, a disease distinguished by the absence of hydrochloric acid in the gastric juice. On the other hand, I have had several patients with advanced cancer of the stomach whose gastric juice showed very high values of hydrochloric acid.

Occasionally when there is a low-lying stomach and the cancer is in the pyloric end, the growth may be palpated in a fairly early stage, though often when a cancer of the stomach is distinctly palpable it is too far advanced for excision. There are, however, distinct exceptions to this rule. The occasional type of mucoid or so-called colloid cancer, which usually is not a very virulent malignancy, may be limited to the stomach when it has assumed a considerable mass, and may still be operable. In a series of necropsies, Dr. Margaret Warwick (Warwick, Margaret: Analysis of One Hundred and Seventy-Six Cases of Carcinoma of the Stomach Submitted to Autopsy. *Ann. Surg.*, 38:216, August, 1928) has called attention to the fact that in 23% of the necropsies the cancer was still limited to the stomach, whereas in the total deaths in a large series of gastric cancers of Saltzstein and Sandweiss (Saltzstein, Harry C., and Sandweiss, David J.: The Problem of Cancer of the Stomach. *Arch. Surg.*, pp. 113-127, July, 1930) only 7.7% had undergone a partial gastrectomy. This shows undoubtedly that many cases of cancer are permitted to go to their death that might have been given some chance by a properly performed gastrectomy.

One of the chief causes of deaths in cancer of the stomach, according to Dr. Warwick, is perforation of the stomach. It has usually been assumed that perforation of the stomach is due to peptic ulcer, but in Dr. Warwick's series of 176 cases there was open ulceration in only about 45 cases, and in about half of these death was due to perforation and peritonitis.

Finally, by all means the most helpful aid in diagnosis of malignancy of the stomach is roentgenology. This examination should be done by one

who is skilled in roentgenologic diagnosis of the gastro-intestinal tract, for a half-baked roentgenologic diagnosis on the stomach or colon is worse than none at all. This method of diagnosis is reaching a stage of high efficiency. It must be recalled that when a decided filling defect is found in the stomach the cancer is already far advanced. A punch-like defect that is supposed to be characteristic of benign ulcer in the stomach has been found not infrequently to be caused by cancer, and occasionally a filling defect from a cancerous ulcer may appear partly to fill up on subsequent x-ray examinations. Then, too, it is quite possible to have both a benign duodenal ulcer and a cancerous ulcer of the stomach existing in the same patient. All of these different factors must be borne in mind.

Practically all defects along the greater curvature that can be demonstrated by x-ray are malignant, and many of the ulcers along the pyloric canal are also cancerous. The benign gastric ulcers are more likely to occur along the lesser curvature in the middle of the body of the stomach and up to the pyloric canal, which is about an inch from the pyloric sphincter. Ulcers within the grasp of the pyloric sphincter are usually benign, but they may be malignant. We should always suspect that prepyloric ulcer may be cancerous.

The use of the gastroscope in diagnosis of cancer of the stomach may occasionally be helpful, particularly if the cancer is in the cardiac portion of the stomach.

One of the fatal things in cancer in general, and particularly in cancer of the stomach, is friendship; the desire of a friend, whether he is a layman or a physician, to minimize a serious condition and to resent a diagnosis of cancer.

#### EARLY DIAGNOSIS

The practical point about an early diagnosis of cancer of the stomach is to educate the people that they must apply to the family physician concerning any continuous symptom of indigestion, and the general practitioner should be cautioned to take these symptoms seriously. In no other way can cancer of the stomach be recognized in its early stages. Thomas Scholz, of New York (Scholz, Thomas: Curriculum Vitae of Two Gastric Cancers. *Am. Jour of Cancer*, 18:834-851, August, 1933) reports two cases which were diagnosed as cancer of the stomach, one 2½ years and the other 3½ years before they came to an operation. At operation the lesion was too extensive for resection, but the patients were apparently in good health when the diagnosis was first made. Because of the apparent good health and well-being it was difficult for the patient and for the attending physician to accept the diagnosis at a time when the lesion was operable and there was an excellent chance for cure by excision. Dr. Scholz says: "The practitioner must, therefore, realize that x-ray examination furnishes him a means of obtaining a diagnosis in practically every instance at a sufficiently early stage to make recovery possible by a timely

operation. But to save the patient's life he must order the x-ray examination *early* and not late in the disease. It is still a common experience; in fact, it seems to be the rule that patients are treated for digestive disturbances for months and even years without previous roentgen examinations, and that the latter are ordered only after clinical evidence of gastric malignancy has appeared, just for confirmation. Not infrequently great pride is felt in such a confirmation. It apparently is not yet fully grasped that such an attitude is nothing to be proud of. On the contrary, it should be recognized that such a delay in the use of roentgenology is the worst service the physician can possibly render his patient, because thereby he robs him of the only chance of recovery, as a late x-ray examination is quite as useless as a late clinical diagnosis."

Men are more prone to cancer of the stomach than women, though in my own personal experience the ratio is not so great as that quoted in other clinics of about four or five men to one woman.

In order to make an early diagnosis, which is essential to successful treatment, any patient over 35 years of age, and particularly a man, who has gastric symptoms should be treated by a general practitioner for a few weeks, and if the cause of these symptoms can be ascertained and corrected by treatment, nothing further need be done. But if the cause of these symptoms cannot be ascertained and corrected, the patient should be given a thorough roentgenologic study. It must be recalled that the classic symptoms of coffee-ground vomiting, loss of weight, the palpation of a mass in the epigastric region, and the demonstration of Virchow's glands in the neck, are often terminal symptoms. The earlier the diagnosis is made, usually the more difficult it is. If, then, we can adopt this policy of an early thorough examination as has been outlined, the great majority of these patients will prove to have either a nervous condition or some extra-gastric cause for their symptoms which can be relieved, but every now and then a case of gastric cancer will be picked up that would otherwise be missed. I have seen patients with inoperable cancer of the stomach that have been treated for "nervous indigestion" for many months or years. It is true that there is a considerable proportion of cases in which the malignancy develops along the "silent" area, and nothing can be done because there are no symptoms until the disease is too far advanced for treatment, but it is equally true that the majority of cases of cancer are located either in the pyloric end of the stomach or in the main body of the stomach, which is readily susceptible to partial gastrectomy. The fact that the location of a minority of gastric malignancies prevents their early recognition is not a sufficient justification for neglecting the early diagnosis of the majority of the cases that may be capable of recognition.

*It is important to emphasize that practically all*



early gastric cancers are relieved of symptoms for a while by the medical treatment for peptic ulcer. The fallacy that relief of gastric symptoms by medical treatment and diet is a therapeutic test that demonstrates the lesion is benign has been responsible for many deaths in permitting patients to delay operation.

#### TREATMENT

The treatment may be to some extent preventive because it is undoubtedly true that some cancers of the stomach spring from benign peptic ulcers and from benign polyps. The proportion of peptic ulcers that become cancerous is a moot question, some placing it as high as 25 to 30%, and others as low as 1 or 2%, but that there are such well authenticated cases is not doubted by anyone who has seriously studied this subject. In a recent excellent article on this subject, Scott and Mider (Scott, W. J. Merle, and Mider, G. Burroughs: Malignancy in the Chronic Gastric Ulcer. *Am. Jour. Surg.*, 40:43, April, 1938) say: "It is, in our opinion, a conservative estimate that, when the incidence is determined in this manner, 10 to 20% of the chronic ulcers of the stomach without definite criteria of malignancy prove eventually to be or to become malignant." It is also well known that adenomatous polyps of the stomach become cancerous. While some portions of a polyp may be benign in structure, other regions may show malignant cells—the so-called *carcinoma in situ* of Broders. Thus, McRoberts (McRoberts, J. W.: Gastric Polyps. *Proc. Staff Meet.*, Mayo Clinic, 8:685, 1933) reports five cases of gastric polyp removed at operation in which careful histologic examination showed that four contained definite cancerous tissue. In one case in which three apparently benign polyps were removed by excision with the cautery, the patient returned 6½ years later with gastric carcinoma that was inoperable.

If the lesion proves to be a duodenal ulcer, it may be treated indefinitely by medical means, because here malignant degeneration is rare, but if it is a gastric ulcer the case should be observed with the greatest caution. It must be borne in mind that occasionally a duodenal ulcer may exist in conjunction with a gastric ulcer that may be cancerous, yet the symptoms of the duodenal ulcer may dominate. Rivers and Dry, of the Medical Department of the Mayo Clinic (Rivers, A. B., and Dry, T. J.: Differentiation of Benign and Malignant Gastric Ulcers. *Arch. Surg.*, 30:702, 1935) say: "It seems to us that unless contraindications are present it is usually safer to treat gastric ulcers surgically." A noted medical gastro-enterologist, Dr. William Gerry Morgan (Morgan, W. G.: The End Results of Treatment for Peptic Ulcer. *South. M. J.*, 25:256, 1932) believes that all cases of gastric peptic ulcer are surgical cases for immediate operation. This doubtless is the safest attitude in the long run, but if the ulcer is small it would seem justifiable to give medical treatment for a few weeks.

Whether a cancer of the stomach results from a

peptic ulcer, or whether it is from the beginning an ulcerating cancer, makes very little clinical difference, since both are cancerous and should be treated alike. If we are reasonably sure that the disease is cancer, of course, there is no occasion for hesitation.

Naturally, preventive treatment of cancer of the stomach consists of removal of lesions that are probably pre-cancerous, such as polyps and gastric ulcers, unless the ulcer responds very readily to medical treatment.

A partial gastrectomy, which is indicated when the growth is confined to the right portion of the stomach, should be preceded by a few days preliminary treatment. This consists in gastric lavage, in correcting dehydration, and, if there is marked anemia, in transfusion of blood. An important feature in the preliminary treatment is the administration of dilute hydrochloric acid, an excellent physiologic antiseptic, and which was first suggested for these cases by a member of our staff, Dr. W. H. Higgins. It adds to the safety of the operation by decreasing the chances of peritonitis.

An intraperitoneal vaccine may also be used to great advantage in preventing peritonitis. We prefer the vaccine of Steinberg, in which the killed colon bacillus is suspended in a solution of gum tragacanth and salt solution.

The selection of the anesthetic is important, because most of these patients are elderly and have low resistance. In patients over 60 years of age I prefer local anesthesia, after giving them a full dose of morphine and atropine, or of hyoscine, morphine and cactine. When the peritoneal cavity is opened the retroperitoneal tissues are infiltrated with the novocain solution.

It is well in these cases to give intravenous dextrose in Ringer's solution, but if there is some arteriosclerosis this must be administered with care. Usually an intravenous cannula is inserted at the beginning of the operation, and the solution instilled according to the blood pressure. If the operation is prolonged and the patient's condition is not satisfactory, a transfusion of blood at the end of the operation is indicated.

In many cases, the modification of the Billroth I operation of partial gastrectomy which I have been using for 16 years can be adopted. This offers many advantages over the Billroth II or Polya type. It permits a direct union between the stomach and duodenum, which is the physiological condition. The lesser curvature of the stomach is fixed to the upper border of the duodenum, thus preserving the lesser curvature, which initiates peristalsis in its normal relation to the duodenum. The duodenum is flared open, and not infrequently an end-to-end union can be made, but, if not, the redundant lower portion of the gastric stump is easily infolded. If the cardiac stump is lifted up and the adhesions which bind it are severed, or the gastric artery is divided, it will be found that the cardiac stump can be approximated to the duodenum much more frequently than is usually supposed.

An important feature after any stomach operation is to relieve tension on the sutures and to rest the stomach by keeping it empty. The usual method for doing this is by inserting a Levine or Jutte tube through the nostril. If this is done, do not keep the stomach completely empty, as it annoys the patient very considerably. Even having an indwelling tube for several days is uncomfortable to anyone, and to some patients it is a source of great annoyance. Aside from any other features it may be positively dangerous. Thus, Iglauer and Molt (Iglauer, S., and Molt, W. F.: Severe Injury to the Larynx Resulting from the Indwelling Duodenal Tube. *Ann. Otol., Rhinol. and Laryngol.*, 48:886, 1939) reported severe injury to the larynx resulting from indwelling duodenal tubes. They collected ten cases occurring within a 2-year period, in which there has been severe injury to the larynx from an indwelling tube through the nostril. Eight of the patients developed laryngeal stenosis of such severity that tracheotomy became imperative, and two of the patients died. In nine of the ten patients the indwelling duodenal tube had been introduced following a laparotomy. The tube was indwelling for comparatively short periods, varying from 6 to 20 days, the average being  $8\frac{1}{2}$  days. The article is a thorough and interesting study of the danger of such a procedure.

In order to avoid this we are now using a simple method that we call a "tube gastrostomy." After the posterior row of sutures uniting the stomach to the duodenum has been placed in, completing the operation of partial gastrectomy, a sharp-pointed hemostat is thrust (directly, not obliquely) through the stomach from within outward at a point on its anterior wall near the greater curvature, where the stomach can be easily brought into contact with the abdominal wall. A soft rubber catheter, No. 18, in which an additional perforation has been made near the end, and which is clamped at its middle, is caught with the hemostat and drawn into the stomach. After 3 or 4 inches of the catheter are within the stomach, the catheter is fastened to the gastric wall by a suture of fine chromic catgut and a purse-string suture of chromic catgut is placed around it. The butt of the catheter is drawn through a stab wound in the abdominal wall, and then clamped, and the clamp on its middle is removed. The catheter is gently pulled upon until the stomach is in contact with the parietal peritoneum. Sutures of fine chromic catgut are placed between the stomach and the parietal peritoneum and some omental fat is brought around this point of contact. The fat not only adds to the security of the punctured wound, but may prevent a subsequent tight adhesion. By this method the muscular layers of the stomach are not cut, as would occur if a knife were used to make the puncture; their fibers are merely pushed apart, as are the muscular bundles of the abdomen in making a McBurney incision. The catheter fits in snugly, and there is usually no leakage after the catheter has been removed.

As is well known, the intestinal mucosa increases in its sensitiveness to the gastric juice with its distance from the pylorus. While in cancer the secretion of acid is frequently low or absent, it may be resumed after removing the lesion, and there is always a possibility of jejunal ulcer. This has actually happened in a case of gastric cancer reported by Dr. Fordyce B. St. John, of New York, when a jejunal ulcer followed a resection by the Billroth II type of operation and the patient succumbed. (St. John, F. B., Whipple, A. O., and Raiford, T. S.: Treatment of Carcinoma of the Stomach; Summary of Results. *Am. J. Surg.*, 3:246, Feb., 1936).

When this type of operation is impossible, the Hofmeister operation, in which only the lower portion of the gastric stump is united to the jejunum, seems advisable.

In linitis plastica, or when much of the cardiac end of the stomach is involved, a total gastrectomy may be indicated. While such an extensive operation necessarily has a limited field, the improvement in the technic makes it more worthy of consideration. A long loop of jejunum is sutured to the posterior wall of the esophagus before the stomach is removed, the stomach is then cut away, and the union is completed. It seems better to unite the stump of the duodenum to the right side of the loop of jejunum, rather than close the duodenum. An entero-anastomosis is made between the lower limbs of the jejunal loop, and below this a jejunostomy with a mushroom catheter according to the method of Hendon is established, which is quickly done and is very satisfactory, particularly for feeding.

In cases in which the cancer involves the pyloric end of the stomach but is distinctly inoperable, a type of Devine operation may be done, or a modification as adopted by Pack, of the Memorial Hospital in New York, in which the stomach is divided and complete rest is given to the pyloric end of the stomach, the site of the cancer.

Gastro-enterostomy has but little if any place in the therapy of gastric cancer. When a large fungating mass exists in the pyloric portion of the stomach, a partial gastrectomy by the modification of the Billroth I method described may give much comfort and prolong life, even if there are small metastases outside of the stomach that cannot be removed.

#### SUMMARY

The important point in cancer of the stomach is early diagnosis. Trivial symptoms of indigestion developing in those over 30 years of age, especially men, should be considered seriously and not casually, and the cause of these symptoms should be definitely ascertained.

Surgical excision is the only satisfactory treatment for cancer of the stomach. An operative technic should be employed which will radically remove the lesion and restore the gastro-intestinal tract as nearly as possible to its physiologic normal.



## Present Status of the Treatment of Urinary Infections

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FROM the standpoint of the general practitioner, the treatment of urinary infections is likely to consist of the administration of sulfanilamide or one of its related chemicals in more or less radical doses. If the infection subsides, he is naturally well satisfied, but if it does not, he speculates as to the possibility of there being some underlying pathological condition that will necessitate the undertaking of extensive x-ray examinations together with intravenous pyelograms, and very possibly the calling in of his colleague, the urologist. When the latter is approached, he is bound, for his own protection, to subject the patient to the most dreaded of all diagnostic procedures, a cystoscopic examination, with its associated complete urological study. This being completed, it is not uncommon to discover that the patient has a simple case of pyelitis or pyelonephritis, and has undergone a diagnosis as costly as a normal delivery, but with the only heir an urinary frequency, the result of a traumatized urethra and bladder! Such an increase in the cost of medical care may be due simply to the fact that the infection in question is caused by an organism which is not affected by sulfanilamide therapy, such as the streptococcus faecalis. Certainly there is no valid reason why a therapeutic test with sulfanilamide should not be carried out and extensive urological investigation which frequently prove negative avoided. When such a test is made it should be recognized that if improvement does not occur within 48 hours, the treatment should best be discontinued, and adequate investigation undertaken. The same, of course, applies when the patient having recovered, there is an early and unexplained recurrence.

There is no question but that sulfanilamide is bactericidal to nearly all organisms that inhabit the urinary tract, but their response to its application varies within wide limits. Unfortunately, while sulfanilamide has the advantage of being both efficient and cheap, it is an unpleasant drug to ingest, although the warnings which have been given concerning its dangerous toxicity seem a trifle exaggerated, for the reported cases of agranular leucopenia and anaemia have invariably occurred either following excessive dosage or in patients in whom the drug has continued to be administered after mild toxic symptoms were first noted. Because it is rapidly eliminated in the urine, the forcing of fluids upon the first sign of toxic symptoms will reduce the amount of the drug in the tissues so rapidly that most of its toxic manifestations immediately subside.

It is beginning to be realized that large doses of sulfanilamide are unnecessary in most cases of infection in the urinary tract. Smaller doses, fre-

quently as little as 5 or 10 grains daily, will sometimes keep certain chronic infections under control and cause no toxic manifestation. It is interesting that the concentration of sulfanilamide in the urine, to be efficient, must be far in excess of that concentration found in the tissues, but because of its rapid elimination in the urine this is easily accomplished with much lower dosages than are required when one is prescribing for systemic infections.

Sulfanilamide has not proven of great value as a prophylactic. Apparently in the presence of traumatized tissue it loses much of its efficiency, for several urologists have tried administering it prior to transurethral resections and state that it in no way diminishes their incidence of postoperative febrile reactions. The same lack of effectiveness has been observed when its administration was undertaken in an endeavor to prevent infection occurring following plastic operations on the renal pelvis. However, after a sufficient interval has elapsed to permit the traumatized tissue to heal, the drug will then act efficiently in ridding the patient of his infection, provided urinary drainage is unobstructed.

It is not unusual in a urologist's office to have patients whose urinary infections have defied the best efforts of one's colleagues make the emphatic statement: "Doctor, you can do anything you desire in the way of examination, and I'll take most any medicine, but I'll not swallow another bit of sulfanilamide. No, sir; I'd rather have this frequency and getting up at night than feel the way that stuff makes me feel!" Confronted with such determination, one should not feel that he is completely defeated, but rather that he must win the battle by flank attack with his less heavy weapons rather than by frontal attack with his most powerful ones. However, to do so, he must be familiar with the fundamental principles of urinary sepsis, the first and foremost of which is that no form of therapy will correct an urinary infection if there exists an obstruction to the outflow of urine. Not infrequently the most common evidence of such obstruction is in the urinary bladder, the result of prostatic hypertrophy or stricture in the male, of pregnancy or the results of pregnancy in the female, while in the aged of both sexes the changes due to arteriosclerosis and other degenerative diseases often result in faulty or incomplete emptying of the bladder. In addition to these more common causes of urinary retention are the cases of true cord bladder where an injury, tumor or infection of the spinal cord has rendered bladder function incomplete. Of these the tabetic is the best example, and it is not generally appreciated how frequently an undiscovered neurological lesion of the spinal cord first manifests itself by bladder

dysfunction, and is, as a result, discovered by the urologist's cystoscope rather than by the neurologist's hammer. It is, therefore, wise when the patients do not respond to the therapeutic test of adequate doses of sulfanilamide to have them void, and by immediately passing a catheter to ascertain if the bladder completely empties. If it does not, the reason for persistence of the infection is evident.

#### RESIDUAL URINE

The presence of residual urine in cases of pyelitis of pregnancy should always be suspected, and it is a clinical observation that such cases of pyelitis will more rapidly clear if the bladder residual is regularly removed. In fact, no case of pyelitis of pregnancy can be said to be properly cared for if the presence or absence of such residual is not at once ascertained. How important this is becomes evident by the increasing appreciation that damaged renal circulation is the probable cause of many cases of hypertension. Some authors go so far as to assert that pyelitis of pregnancy and pyelonephritis are the invariable forerunners of the pre-eclamptic state, and that these toxemias of pregnancy are the precursors of renal changes that finally result in hypertension. Other forms of retention, such as hydro-ureters, pyelectasis, diverticula and calculi, are primarily the concern of the urologist, and need concern us here simply as some of the less frequent causes of failure of our therapeutic tests in urological infections. Having experienced such a therapeutic failure, and being reasonably certain that urinary retention is not the cause, the most logical assumption is that one is dealing with an organism which is unaffected by sulfanilamide. Under such circumstances, and in those patients who refuse to take the drug, it is well to recall that nature's natural resistance to urinary infection is carried out by keeping the urine always acid. Investigation and clinical experience during the past decade has demonstrated that urine may be rendered bactericidal simply by increasing its natural acidity, for at 5.5 pH most noxious bacteria in the urinary tract cease to multiply, and when 4.5 is reached the vast majority are dead. Interestingly enough, the streptococcus faecalis, which is immune to sulfanilamide therapy, rapidly succumbs to this increased acidity as does the colon bacillus, the most frequent invader of the urinary tract.

#### ALKALINIZING

It seems strange that the belief that alkalinization of the urine will relieve dysuria should have gained such a foothold when we now know that no amount of alkalinity possible with human urine is bactericidal. There is nothing to show that an acid urine is irritating or an alkaline urine soothing to the urinary tract. There is much to indicate that the reverse is true; for those who live for an extended period on an alkaline ash diet are prone to develop an irritable urinary mucosa which, upon cystoscopic examination, gives all the appearance of a severe cystitis that only the presence

of a sterile urine belies. Such patients recover rapidly when the urine is acidified with immediate diminution in their frequency and recovery from their dysuria.

The national campaign to keep on the alkaline side which is being carried on in order to sell everything from Alka Seltzer to pineapple juice is helping the urologists' practice almost as much as sulfanilamide has hurt it, for the constant precipitation of urinary salts in an alkaline urine is increasing the incidence of calculi to an astounding degree! The most satisfactory drugs for increasing urinary acidity has proven to be ammonium chloride, and when this is given in conjunction with mandelic acid the urine takes on bactericidal action proportionate to its degree of acidity. Unfortunately, both mandelic acid and ammonium chloride are bulky drugs, and when they are administered in the form of ammonium mandelate or calcium mandelate the patient has to take so many tablets to obtain adequate dosage that the mechanical process of their ingestion becomes irksome. I, therefore, have preferred to give the mandelic acid in liquid form and limit the tablets to the administration of the ammonium chloride. Following this method, I have had success with this form of administration where others had failed using the same drugs in tablet form.

#### RATIONAL CHEMOTHERAPY

When these two therapeutic tests have failed to rid the urinary tract of all infection, it seems imperative that the offending organism should be identified. This can be readily done in most cases, and need not require elaborate laboratory investigation. Gram stain of the urinary sediment will at once show whether the organisms are gram positive or negative, and which are cocci or bacilli. The most frequent of the gram negative bacilli are the colon, the aerogenes and the proteus. The colon responds readily to both types of therapy described. The proteus splits urea, and tends, by making the urine alkaline, to defeat medication by mandelic acid, while the *Aerobacter aerogenes* is the gangster of the group and the one which can stand the longest against therapeutic attack.

Of the cocci, the gram positive outnumber the gram negative, and the staphylococci occur more frequently than the streptococci, except for the faecalis, which is frequently encountered with the colon bacilli. It has, fortunately, peculiar staining properties which make it easily identified by the pseudo halo with which it surrounds its unholy self! Occasionally, as I have referred to earlier, the therapeutic test proves efficient, but there is an early recurrence of the disease. When this happens in the male, the prostate should be suspected, for it is far easier to free the urinary tract of infection than the genital.

Fortunately, sulfanilamide has at last given us a drug which acts in the prostatic secretions. Because the concentration of the drug in the urine is greater than its concentration in the tissues, it is imperative in these cases to give larger doses than



would be necessary if the disease were confined to the urine alone. Some supplement the oral administration of sulfanilamide by the daily injection of prontosil, feeling that they obtain a more favorable action on the prostatic tissue. Such therapy, together with a proper course of massage, will usually prove efficient.

It early became apparent that sulfanilamide, while its therapeutic effect was little short of the miraculous, did not permit the host to develop an immunity to the infecting organism, and that once the infection was checked by this drug it behooved the conscientious practitioner to continue with its use in smaller doses for an extended period, or relapses were likely to take place. Nowhere is this more true than in the urinary tract. Of the derivatives of sulfanilamide, the most frequently used has been sulfapyridine. It was hoped that this drug, which has proven so effective in the treatment of pneumonia, would be found to be equally as effective in infections of the urinary tract. Unfortunately, data is now available which indicates that it is particularly irritating to the renal parenchyma, due to the formation of multiple crystals and even stones if the fluid intake during its administration is permitted to fall below 3,000 cc. daily. These crystals cause a microscopic haematuria in so large a percentage of cases that Brown, Thornton and Wilson in a recent report in the *American Medical Journal* state: "Oliguria, haematuria, pain in the costovertebral angle and anuria are serious and fairly common complications of intensive sulfapyridine therapy, particularly when the concentration in the blood is high." Its use in urinary infections would, therefore, seem contra-indicated, for Antopol reports that microscopic haematuria was encountered in 16 out of 40 cases treated with sulfapyridine.

#### NEW DRUGS

During the past few months, two other closely related drugs have been undergoing extensive clinical investigations; namely, sulfamethylthiazol and sulfathiazol. Both of these drugs have proven more efficient against staphylococcus infections than sulfanilamide. It was hoped that in addition to their grater efficiency they would also prove less toxic. Unfortunately, the administration of sulfamethylthiazol under the most careful therapeutic control has been followed by peripheral neuritis sufficiently often to compel the manufacturers to consider it too dangerous for general use. A letter received last week from the research department of the Winthrop Chemical Company confirms this report, for they wrote:

"Realizing that the drug had been studied under well controlled conditions by discriminate and careful observers, it was the opinion of this department that the incidence of the neuropathy would perhaps increase should it be, at a future date, generally available for prescription. This would not be to the best interests of physicians and patients. We would, therefore, prefer not to assume the responsibility for its promotion."

At the present time the entire investigation is proceeding with the non-methylated derivative, sulfathiazol, which is particularly effective in the treatment of pneumococcal pneumonia, and, like sulamethylthiazol, in the treatment of staphylococcal, gonococcal and other infections. Excellent results are being obtained by certain investigators in the treatment of clinical gonorrhea and other urinary infections."

Sulfathiazol, however, has proven so specific for staphylococcus infections that experimental clinical investigation has been hampered by the great demand among our profession for the drug to be used in desperate cases, so that the manufacturers have so far been unable to produce enough for their own research. I recently had occasion to observe its effect in an early case of perirenal infection where the only clinical evidence of the disease was a history of furunculosis followed by tenderness in the costovertebral angle with a septic temperature and a high leucocyte count. Cystoscopic findings were negative. This patient recovered rapidly following its administration, although large doses of sulfanilamide had been ineffectual! It is apparently much less toxic than the other members of this group of drugs, and will be, I am told, generally available the latter part of this summer.

The future, therefore, looks very bright as far as chemotherapy in the urinary tract is concerned, but when therapeutic tests with these drugs do not bring early results, it would seem wise to have a urologist search for some form of possible urinary obstruction.

112 No. Madison Ave.

#### DISCUSSION

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For me to add anything further to the paper presented by our well-known friend, Dr. Bumpus, would be nothing short of ridiculous. He has treated the subject in his usual excellent manner. I thought, however, it might, in a general way, help all of us if in my discussion I briefly reviewed the usual group of urinary antiseptics which we all have used at one time or another during the last decade.

An ideal urinary antiseptic, of course, should be one that can be administered by mouth or parenterally, that is well tolerated by the gastro-intestinal tract and that has definite bactericidal effects when excreted by the kidneys.

*Urotropin*—The urine must be acid (pH 5.6 or less). A concentrated urine is necessary. This can be brought about by the limitation of fluids. Ammonium nitrate or chloride enhances its antiseptic value. The concentration in the urine must be 0.5% for the urine to be bactericidal.

*Pyridium*—Urine containing eliminated pyridium has been shown not to have any consistent germicidal power. Raising or lowering the pH of the urine during the administration of the drug has no apparent effect on the germicidal power of the pyridium-containing urine. It, however, seems to have a definite soothing effect on inflamed mucous membranes of the bladder. Pyridium eliminated in the urine appears to have a very definite effect in urinary tract infections caused by the staphylococcus. It further appears to inhibit the multi-

plication of hemolytic streptococci, but apparently has no effect on anaerobic streptococci.

**Acriflavine**—The action of this drug is more pronounced when given in conjunction with an alkali (bicarbonate of soda). It is quite prone to produce gastro-intestinal disturbances.

**Caprokal** (Hexylresorcinol)—Caprokal has limited value in chronic infections, due to staph. albus, aureus and some strains of b-pyocyaneus.

**Ketogenic Diet**—This treatment is unsatisfactory in the treatment of pyelitis during the acute febrile state. It is extremely difficult to use without hospitalization and the services of a dietician.

**Mandelic Acid**—At least 15% of the patients cannot tolerate this drug. If carefully watched, the urine will frequently show numerous casts. Gross hematuria has been reported following its use. It should never be used in the presence of renal insufficiency. The urine must have a pH of 5.5 or less. This is the antiseptic of choice in streptococcus-fecalis infections. The dosage is 12 gm. per day. pH can be easily tested with methyl red.

**Sulfanilamide**—At present this is the urinary antiseptic of choice. Sixty-five to 70% of bladder and upper urinary tract infections have been cured by sulfanilamide. It, like all others, fails in the presence of renal or bladder pathology, such as calculi, obstruction or impaired renal function. About 50 to 60 grains daily at the onset of the infection seem to be sufficient; then smaller doses (40 grs.) are quite effective. This usually gives a 10 mg. per cent concentration in the blood serum. It is pertinent to note that more failures occur with its use in males than in females. This is probably due to associated pathology in the prostate (prostatic infections). Concentration of sulfanilamide in prostatic secretion is one-tenth less than in urine itself. Quite a wide variation of tolerance outside of the urinary tract, both gastro-intestinal and systemic, exists. Gastro-intestinal symptoms, chiefly nausea and abdominal distress, are more

frequent in older people. Systemically, also more apparent in the aged is extreme fatigue, drowsiness, headaches, dizziness and dyspnea. Cyanosis and skin eruptions are rarely seen on moderate dosage.

Bacteriologically, it does not have any apparent effect on B-proteus, Friedlander's bacillus, B-pyocyaneus, streptococcus-fecalis or areobacteric areogenis. Sulfanilamide should be given for two weeks. If the urine is not sterile by the end of this period, associated renal pathology exists or the infection is due to streptococcus-fecalis or areobacteric areogenis.

Sulfanilamide works equally well in alkaline or acid urine. This is distinctly advantageous on account of the many mixed infections encountered in the urinary tract.

Coccus infections are apparently not affected by either mandelic acid or sulfanilamide therapy. These infections respond best to neosarsphenamine. Marshal, et al, found that sulfanilamide is absorbed from the intestinal tract within 4 hours, and that in administering a given daily amount of this drug in divided doses, it takes from 2 to 3 days to establish equilibrium between the amount ingested and the amount excreted. After equilibrium is established, almost 100% of the daily ingested amount can be found in the urine in the free and combined form (acetyl-sulfanilamide); therefore, when giving sulfanilamide you can anticipate 72 hours to elapse before any marked clinical improvement is apparent. About 50% of the sulfanilamide is excreted in the urine in the inactive (acetate) state. It is well to limit urine output to 1500 cc. daily to insure concentration.

Remember that for the success of any drug used, sufficient kidney function is a prerequisite.

The three postulates for the use of any urinary antiseptic are:

1. Knowledge of type of infecting organism.
2. Presence or absence of faulty drainage.
3. Competent renal function.

## Further Notes on the Clinical Aspects of the Ultra Short Wave X-Ray

ALBERT SOILAND, M. D.

Los Angeles, California

**D**URING the past decade we have systematically developed our technique and acquired some experience with this type of x-ray service in malignant disease. This has been obtained through a 600 KV Villard type transformer, energizing a 14-foot open-air x-ray tube (Lauritzen type), with the x-ray beam filtered through metallic factors equal to 1 millimeter of lead. The target-skin distance is 50 centimeters, yielding 15 r per minute, measured in air, thus obtaining 40% depth dosage at 10 centimeters below the surface. In accord with every investigation and undertaking one learns better in the school of practical experience. Therefore, we feel that we are now in a position to make comparisons from which certain conclusions can be drawn between clinical reactions to 600 KV and the standard 200 KV with which we share our routine work. At the onset we will postulate that in the treatment of the average primary carcinoma

of the breast, with its usual glandular involvement, a total of from 4000 to 6000 r will be sufficient to sterilize the whole field, arrest the growth, and, not infrequently, accomplish all that can be expected of any type of treatment, including radical surgery, and we agree that this can be accomplished by either 200 or 600 KV. With the former, however, we get painful dermatitis of the skin, fear apprehension of everlasting x-ray damage, together with much adverse publicity from the patient, her friends and not infrequently from the doctor who refers the patient. While the end results may be equally satisfactory, if this type of patient is subjected to 600 KV radiation, the results are achieved with a minimum of the disagreeable objective and subjective symptoms alluded to. This in itself is our main reason for preference of 600 KV radiation.

Radiation treatment of various diseases, especially neoplastic growths, has taken such strides in the last few years that it has at the present time



become an established form of treatment. We feel that a distinct gain has been made in the treatment with short wave lengths by increasingly higher dosage in that we are thus able to give a greater amount of x-ray energy, without the former untoward effects on the individual patient alluded to, and, in addition, the higher voltage permits of depth dosage in a much shorter period of time.

Modern departments of radiation therapy incorporate the knowledge, skill and services of a physicist, who, with his cognizance of this specialty so difficult for the ordinary radiologist, has added materially to the stabilization of modern radiation therapy as an agent of precision in the treatment of neoplastic disease.

We are now living in an era of rapidly developing supervoltage or short wave x-ray energy of the gamma type, and a conservative evaluation based on facts must be acquired before we can attain established and enduring results. Only in this way can a correct answer be found to this newer therapeutic agent.

During the pioneer period, when experimental work was being carried forward at the California Institute of Technology, we maintained a treatment contact with that institution, and this wealth of clinical experience added to that of our own service over a period of 10 years, we feel competent to express our opinions and hopes on the clinical, economical and human sides of this question.

In 1920, when we graduated from the 100,000 to the 200,000-volt x-ray apparatus, x-ray therapy climbed to a higher and more respected sphere in medical practice. During the following decade, the conviction continued to grow in the minds of radiologists here and abroad that although this dosage was not accomplishing the desired results in the deep-seated malignancies it added a strong reinforcement to the lower voltages in the better treatment of certain superficial lesions. With the advent of the super short wave x-ray energy, we are still unable to be certain whether or not we have reached the goal our earlier experiences led us to expect. Certainly, the results obtained in remote and metastatic carcinoma have been beyond those secured with 200,000 volts, but even these are not curative enough to satisfy us.

The astonishing effects in the treatment of many extrinsic and chronic superficial cancer lesions, irresponsible to any known remedial agent, have convinced us of the efficacy of supervoltage treatment in this type of neoplastic disease. Consideration must be given, however, to the changing factors of increased filtration, daily application, fractional dosage, and individualized attention under accurate r measurements which may make the voltage factor of less importance than anticipated.

We have referred on previous occasions to various types of disease which respond most favorably to superradiation and certain illustrative cases are herewith presented to prove this point.

It has been our experience, however, that the

most outstanding results have been obtained in that large group of insufficiently treated or radiation-resistant patients with large infiltrating and ulcerating lesions about the face and neck. Many of these patients, when seen, had been subjected to all sorts of applications, some over a period of years, and presented themselves with sclerotic, foul and devitalized surfaces. It is with cases of this character that supervoltage roentgen rays have proved most satisfactory and beneficial. There is a limit, of course, but combination of supervoltage irradiation with adequate electro-surgery will give satisfactory results in many seemingly hopeless cases.

#### CASE RECORDS

*Case 1*—Mrs. A. S. B. Diagnosis: Epidermoid carcinoma, Grade I, left cheek. Treatment: X-ray, 600 KV; 150 r daily; total, 3000 r. Result: No recurrence to date.

*Case 2*—Mr. B. L. Diagnosis: Squamous cell carcinoma, Grade II, right cheek. Treatment: X-ray, 600 KV; 150 r daily; total, 3000 r. Radium, 300 mg. hrs. Result: No recurrence to date.

*Case 3*—Mr. H. D. Diagnosis: Squamous cell epithelioma, Grade II, lower lip. Treatment: (1) X-ray, 600 KV; 150 r daily; total, 2900 r. (2) X-ray, 600 KV; 150 r daily; total, 3850 r. Radium, 310 mg. hrs. total. Result: No recurrence to date.

*Case 4*—Mrs. A. D. R. Diagnosis: Basal cell epithelioma, back of neck. Treatment: X-ray, 500 KV; 300 r daily; total, 6000 r. Result: No recurrence to date.

*Case 6*—Mrs. M. R. R., age 63. Diagnosis: Low grade adenocarcinoma of endometrium. Description of lesion: Cervix firm but smooth; bleeding from cervical canal; no pelvic masses. Treatment: Radium-intrauterine, total of 6075 r. High voltage, 500 KV; 4 M. A.; 50 cm. target skin distance; 0.8 Pb; 0.05 A; four ports; 1500 r each (300 r daily); total, 6000 r. Result: No recurrence.

*Case 7*—Mrs. E. H. W., age 49. Diagnosis: Carcinoma cervix uteri; epithelioblastoma, Grade 3. Description of lesion: Nodular infiltration, both anterior and posterior lips of cervix with extension to posterior vaginal wall; induration extending to right pelvic gland area, causing fixation; fundus, nodular and size of 4 months pregnancy. Treatment: Radium-intrauterine, 3200 mg. hr.; bomb 3750 mg. hr.; 6950 r. total. High voltage, 185 KV; 4 M. A.; 50 cm.;  $\frac{1}{2}$  cu. l al; 300 r daily; total, 3300 r. Supervoltage, 1800 r each (300 r daily); total, 7200. Result: No recurrence.

*Case 8*—Mr. J. W. Diagnosis: Adenocarcinoma, Grade II, left kidney. Treatment: Supervoltage x-ray, 500 KV; 150 r daily; total, 3150 r. Examination: X-ray (KUB), left kidney enlarged, right normal. Cystoscopy, bladder urine contained gross blood with clot at left ureteral orifice; some reddening of bladder neck. Retrograde pyelograms, left kidney had appearance of new growth, right normal; left kidney had 25 cc. capacity on recheck. Urine, many pus and red blood cells. Results: Patient returned to work (full time) in less than a year and has remained well and free from recurrence to date.

In conclusion, evidence points to the fact that the supervoltage treatment of neoplastic disease is a distinct improvement over the lower voltages in a selective group of cases.

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## MAN THE PUMPS!

Now approaches the autumn of the year. The long hot days give way to the sharp coolness of the harvest nights. Dog days come, and a lazy haze softens the mountain vistas. The animals of the forest and field grow sluggish in their foraging. A winter is behind the next north wind. Wooing and mating time is a summer and a spring ago.

But for the two-legs another season of wooing is at hand. Tender murmurs in the vale, teasing pleas in the voice boxes over national hook-ups—all say, "won't you vote for me?" Offers galore of better times, more money, sanity in government, economy in spending—all these and Heaven too! America must be saved from the Democrats, or Republicans. America is doomed if the Democrats are not returned to power, or if the rascals aren't thrown out.

Each organized group in the land is now the object of special, loving attention from the politicians. Each bloc of votes is now loved and esteemed. There is a newly discovered halo on the brows of each of us who have paid our poll taxes. Great fellows today, and only yesterday we were wondering why in hell everyone seemed bent on our humiliation. A month ago the good old family doctor and his colleagues of the American Medical Association were practically Saturday night bums, good for pushing around. Now look at us, all back in Valhalla again! By golly, it's great to be a hero. That bum stuff was kind of disheartening.

That bewildered look the doctor had when he was in the dog house has changed a bit since he realized that paying his poll tax gave him, in his turn, a rather effective weapon with which to do some pushing around on his own account.

Man the pumps!

## PENALTY FOR PATRIOTISM

Patriotism cannot be an isolated phenomenon, observed by the few for the benefit of the many. Numbers of the younger medical officers of the Army Medical Corps are about to be asked to give up their hard-won practices and go into the Army for service of a year or more. These men have served the cause of patriotism by studying and training for commissions and advancement. They have felt that this duty they owed to their country. But it appears that because of their diligence and patriotism they are to be penalized by being torn from their private practices, and sent away to serve in the emergency. At the same time, many other young physicians have never taken commissions, are not liable for service. Some of these men stand now in the fortunate position of having a good practice handed them by the absence of their commissioned colleagues. A bitter undercurrent is developing. The young doctor required to abandon his livelihood to the man not called by the Army is bewildered and resentful over the end result of his supposed patriotic devotion to his country in time of peace.

What has been said here is simply objective reporting of the trend toward a rift that may be highly significant. The opinion must be given that somehow organized medicine should devise an equitable remedy and apply it—and not tomorrow.

## SMALLPOX IN ARIZONA

It seems strange that a state with many medical and public health facilities should be burdened with a disease that may be so easily prevented. Yet, today, in Arizona we are still faced with the problem of controlling a disease that has been eliminated from many of the more populous states of the East. In 1930 there were 241 cases of smallpox reported in the state of Arizona. It is true that the cases were comparatively mild. But for how long can we be sure that this mild form which allays all our suspicions and lulls us into a false sense of security will not suddenly become the scourge of the middle ages or the phantom of death, which, without warning, took so many lives in one of our neighboring states not so many years ago? We can never be sure until we know that we have an immunized and protected population.

The simple and safe procedure of vaccination will prevent smallpox and possibly save the lives of many people. Every child should be vaccinated against smallpox early in infancy. Every person who has not been vaccinated should seek this pro-



tection. Vaccination does not always protect for life; therefore, every person should seek revaccination if smallpox is prevalent in the community.

In 1936 the Middle Atlantic states, two out of three of which have compulsory vaccination laws, with a combined population of over 27,000,000 people, had 0.0 cases of smallpox for each 100,000 people. In the Mountain states, only one out of the seven of which has a compulsory vaccination law, with a combined population of only 4,000,000, there were 38.4 cases of smallpox for each 100,000 people in 1936. That one comparison alone proves the need for and the protection offered by vaccination. Education, medical and health organization and wise legislation will do much to remove smallpox from Arizona's list of communicable diseases and place the state in a health classification equal to those states of the East.

A vaccinated population is a protected population!  
—Fred P. Perkins, M. D.

### YOUR QUESTIONNAIRE

Some time ago the Committee on Medical Preparedness of the American Medical Association sent each physician in the United States a questionnaire. The purpose was to establish and catalogue the availability of America's doctors in case of war. Many of those queried sent their replies back by return mail. There remain thousands who have not yet taken the time to fill the blank and return it. To those this plea is addressed.

At the request of the Surgeon Generals of the Army, the Navy, and Public Health Service, the questionnaire was devised and mailed to all medical men. The service thus offered the armed forces of the United States by the American Medical Association is purely voluntary, and is proffered as a patriotic duty. Each physician receiving a questionnaire should do his bit individually by answering and returning the document immediately. This phase of national defense happens to be quite as important as the registering of men to fire guns, should be so regarded by those concerned. It is one phase that all of us may help with at present—and the best way to express a willingness to answer this call is to send in that questionnaire immediately. The address is: American Medical Association, Committee on Medical Preparedness, 535 North Dearborn Street, Chicago, Illinois.

### BIRTH RATE

The United States birth rate dipped slightly last year after rising in 1937 and 1938, according to preliminary tabulations of the Census Bureau, Department of Commerce.

A total of 2,262,726 births occurred last year, resulting in a birth rate of 17.4 births per each 1,000 estimated population. In 1938, the birth rate was 17.6, based on 2,286,962 births. The rate in 1937 was 17.0.

The preliminary 1939 rate is approximately 5 per cent higher than the lowest birth rate recorded in the history of the birth registration area established by the Census Bureau in 1915. The low point was in 1933 when the rate was 16.5. Census officials cautioned that the slight increase reported in recent years cannot be taken as assurance that the gradual decline of the birth rate has been checked.

New Mexico, with a rate of 33.7, had the highest birth rate reported last year. Other states with high birth rates were Arizona, 26.0, Mississippi, 25.6, and Utah, 25.1.

The lowest preliminary rate reported last year was New Jersey where the rate was 13.0. Other states that had low birth rates were Connecticut, 13.5, Massachusetts, 13.6 and New York, 14.4.

Sixteen states and the District of Columbia showed an increase in the birth rate last year over 1938. A decrease during the same period was reported by twenty-seven states, and in five states there was no change. Greatest increases in the birth rate were reported for the District of Columbia, Delaware, Florida, and South Carolina. Largest decreases were shown in Mississippi, Arkansas, and Illinois.

Birth rates of the Southwest states for 1939 and 1938 follow:

State	1939	1938
Arizona .....	26.0	26.4
New Mexico .....	33.7	33.9
Texas .....	19.6	19.6

### INFANT DEATH RATE

The lowest infant death rate in the nation's history was recorded in 1939, according to preliminary tabulations made public by the Census Bureau, Department of Commerce.

The 1939 infant death rate of 48.0 deaths per one thousand live births is based on 108,532 deaths of infants under one year of age. In 1938 there were 116,702 deaths which resulted in a rate of 51.0. The 1937 rate was 54.4 based on a total of 119,931 deaths. The record-breaking mark of 1939 represents the culmination of two decades of general decrease in infant mortality.

Decreases in the infant mortality rate in 1939, compared with the previous year, were reported by forty-two states and the District of Columbia. The rate rose during the same period in six months. Minnesota's rate of 35.4 was the lowest last year. New Mexico, with a rate 109.3 and Arizona, 95.5, reported the highest rates last year.

Infant mortality rates of the Southwestern states for 1939 and 1938 follow:

State	1939	1938
Arizona .....	95.5	98.8
New Mexico .....	109.3	108.7
Texas .....	66.9	65.1

*Special Section*  
**Arizona State Medical Association**

PRESTON T. BROWN, M. D., *Associate Editor*  
 403 Professional Bldg., Phoenix, Arizona

THE FIFTH HARLOW BROOKS  
 MEMORIAL NAVAJO CLINICAL  
 CONFERENCE

SAGE MEMORIAL HOSPITAL

GANADO, ARIZONA

August 26-27-28, 1940

PROGRAM

*Monday, August 26, 1940*

- 9:00 a. m.—Presentation of orthopedic cases from Sage Memorial Hospital, Joseph Madison Greer, Phoenix, Ariz.
- 9:45 a. m.—“Cancer of the Breast—A Surgeon’s Viewpoint,” E. Payne Palmer, M. D., Phoenix, Ariz.
- 10:30 a. m.—Demonstration of Albee-Comper fracture table, Adrian Comper, Pittsfield, Mass.
- 2:00 p. m.—“Biophysiological Relations of Treatment in Fracture of the Neck of the Femur,” Fred H. Albee, M. D., New York, N. Y.
- 2:45 p. m.—“The Treatment of Generalized Peritonitis,” Donald Collins, M. D., Los Angeles, Calif.
- 3:30 p. m.—“Various Forms of Cancer Found in General Practice, with Discussion of Treatment, Illustrated with Lantern Slides,” C. Hiram Weaver, M. D., Los Angeles, Calif.

*Tuesday, August 27, 1940*

- 9:00 a. m.—“Electrosurgical Obliteration of the Gallbladder” (Report of 921 Cases), Max Thorek, M. D., Chicago, Ill.
- 10:30 a. m.—“Infective Lesions of the Colon, as Ulcerative Colitis and Other Specific Types,” William H. Daniel, M. D., Los Angeles, Calif.
- 2:00 p. m.—“Present Status of Endocrinology in General Practice,” Henry Turner, M. D., Oklahoma City, Okla.

- 2:45 p. m.—“The Evolution and Present Status of the Relationship Between Organized Medicine and the Industrial Commission in the Administration of the Workman’s Compensation Law in Arizona,” Ralph F. Palmer, M. D., Phoenix, Ariz.
- 3:30 p. m.—“Some Phases of Geriatrics,” E. Forrest Boyd, M. D., Los Angeles, Calif.

*Wednesday, August 28, 1940*

- 8:30 a. m.—“Some Unpublished Ideas on Thyroid Surgery,” Buell H. Sprague, M. D., Los Angeles, Calif.
- 9:15 a. m.—“Breasts Which Are Too Large or Too Small; How May They Be Corrected,” H. O. Bames, M. D., Los Angeles, Calif.
- 10:00 a. m.—“Anesthesia,” Wm. W. Hutchison, M. D., Los Angeles, Calif.
- 10:45 a. m.—“The Clavicle; Its Injuries and Treatment,” Steele F. Stewart, M. D., Los Angeles, Calif.
- 2:00 p. m.—Colored Motion Pictures Showing Technique of Gallbladder Subserous Dissection and Lipidol Injection of the Common and Hepatic Ducts, J. H. Patterson, M. D., Phoenix, Ariz.
- 2:45 p. m.—“Mosaic Inlays and Peg Crafts in Reconstruction Surgery” (H Graft of Patella), Fred H. Albee, M. D., New York, N. Y.
- 3:30 p. m.—“Pelvic Fractures; Treatment by Traction and Counter Traction,” Alfred Edward Gallant, M. D., Los Angeles, Calif.



## *Attention, Please!*

### ARIZONA PHYSICIANS URGED TO GIVE PROMPT ATTENTION TO QUESTIONNAIRE MAILED TO ALL DOCTORS BY THE MEDICAL PREPAREDNESS COMMITTEE OF THE AMERICAN MEDICAL ASSOCIATION

A LETTER and questionnaire have been mailed all physicians in Arizona from the Medical Preparedness Committee of the American Medical Association. Arizona physicians are urged to give the questionnaire from the American Medical Association prompt attention, as the entire medical preparedness program of the A. M. A. will revolve around the data obtained.

The United States is not at war with any nation; we devoutly trust that she will not become so engaged. Yet the world situation is so serious that our government is outlining a preparedness program to meet all challenges. If conscription becomes necessary, every effort will be made by the government to assign physicians to work for which they have indicated they are best suited. The questionnaire from the A. M. A. was sent out to give physicians the opportunity for expressing their preferences. The A. M. A. will hold in strict confidence all data supplied by means of the questionnaire. Those who ignore the questionnaire will naturally take the chance of being assigned to any kind of service, with less possibility of rendering aid where best qualified or where most desired by the physician.

IF YOU HAVE NOT RETURNED YOUR QUESTIONNAIRE TO THE A. M. A., DO SO AT ONCE, FOR THE NATION, AS WELL AS THE A. M. A., WANTS TO KNOW WHAT ARIZONA MEDICINE IS GOING TO DO IF AND WHEN WAR COMES. THE AMERICAN MEDICAL ASSOCIATION IN BEHALF OF THE THE MEDICAL PROFESSION, THROUGH VOTE OF THE HOUSE OF DELEGATES, HAS OFFERED ITS SERVICES TO THE GOVERNMENT. LET THE INDIVIDUAL PHYSICIAN RESPOND AT ONCE TO ALL REQUESTS.

*Chas. J. Smith M.D.*

Chairman, Committee on Medical Preparedness.  
Arizona State Medical Association.

## Special Section New Mexico Medical Society

L. B. COHENOUR, M.D., Albuquerque  
Associate Editor

### FIFTY-EIGHTH ANNUAL SESSION OF THE NEW MEXICO MEDICAL SOCIETY Albuquerque, N. M., May 27-29, 1940.

#### PRELIMINARY REPORT

All previous records for registration and attendance at annual meetings of the society were far passed, a total of 159 signing as present at this, the fifty-eighth annual session.

Comparison with annual sessions held at Albuquerque in 1935, when 119 were present, and in 1931, when a total of 107 registered, is interesting and reflects perhaps both the growth of the society and also the increased interest taken by the profession in the state meetings.

The Bernalillo County Medical Society, the hosts, had assembled a fine scientific program and provided entertainment for the visiting physicians and their wives in such a way as to leave naught but pleasant memories after the ball was over.

Through the splendid efforts of the various committees headed by Dr. B. F. Roberts as general chairman, the fifty-eighth annual meeting of the society goes down into history as the best yet, setting a standard which it will indeed be difficult to equal in the years to come.

The committees were composed of:

Scientific Program:  
Dr. M. K. Wylder, Chairman  
Dr. J. W. Hannett  
Dr. E. W. Mendelson  
Dr. J. D. Lamon

Scientific and Commercial Exhibits:  
Dr. J. D. Lamon

Social and Entertainment:  
Dr. H. L. Brehmer, Chairman  
Dr. F. G. Cornish, Jr.  
Dr. J. R. Van Atta  
Dr. William H. Woolston  
Dr. E. E. Royer

Financial Committee:  
Dr. Carl Mulky, Chairman  
Dr. I. B. Ballenger  
Dr. H. L. January  
Dr. E. C. Matthews  
Dr. W. A. Gekler

Registration Committee:  
Dr. M. P. Beam, Chairman  
Dr. R. M. Riley  
Dr. H. L. Bass  
Dr. M. G. Rosenbaum

In his presidential address, Dr. W. B. Cantrell (Gallup), cited reasons why physicians oppose compulsory sickness insurance, stating that "a bureaucratic system has no place in a democratic state and that such a system would put a burden on the low income group which is least able to bear it, would not reach the indigent class and would lend itself to political manipulation."

#### BUSINESS TRANSACTED

New members admitted:

Dr. James P. Turner, Carrizozo.  
Dr. Archie S. Horn, Mountainair.  
Dr. Virginia V. Voorhies, Dixon.  
Dr. Harry E. Bielinski, Member at Large.

Other applicants for membership, action deferred pending investigation of credentials:

Dr. Roy W. Day, Magdalena.  
Dr. G. E. Maxwell, Socorro.

#### Motions Presented and Passed

That Section five of Chapter IX of the By-Laws be changed in accordance with suggestion of the American Medical Association to read as follows:

"Each County shall be the judge of the qualifications of its own members, but as such Societies are the only portals to this Society and to the American Medical Association, every reputable and legally registered physician who is a citizen of the United States, a graduate of a medical school in good repute and who does not practice or claim to practice, nor lend his support to any exclusive system of medicine, shall be eligible to apply for membership."

Approval of secretary's action in sending telegrams to legislators in Washington, D. C., protesting against H. R. 8963, which would give chiropractors the right to treat injured federal employees who are entitled to benefits under the provisions of the United States Employees' Compensation Act.

That the House of Delegates go on record as favoring full support toward carrying on the fight for the passage of a basic science law.

#### ANNUAL REPORT OF MEMBERSHIP by SECRETARY-TREASURER

#### PROCEEDINGS FIFTY-EIGHTH ANNUAL MEETING NEW MEXICO MEDICAL SOCIETY Albuquerque, New Mexico

May 27, 1940.  
Albuquerque, New Mexico.

House of Delegates:

I hereby render a report of the affairs of this office of Secretary-Treasurer for the term ending with this session:

At the meeting held in Gallup, New Mexico, May 11th, 1939, there were no members dropped for non-payment of dues.

Members in the Society at this time are as follows:

	1939	1940
Bernalillo County	49	51
Chavez County	16	17
Colfax County	14	15
Curry County	15	14
Dona-Ana County	13	13
Eddy County	15	18
Grant County	10	10
Luna County	6	5
Lea County	11	9
McKinley County	12	11
Quay County	6	6
San Miguel County	8	13
Santa Fe County	19	27
Taos County	4	3
Union County	2	3
Members-at-large	21	20

Total in good standing at this date. 235

Four applications for membership were received to be presented at this meeting and to be acted upon by the Council.

Death of four members were noted as follows:

Dr. E. W. Johns, Albuquerque, N. M. March 24, 1940  
Dr. D. D. Swearingin, Roswell, N. M. January 15, 1940  
Dr. F. D. Vickers, Deming, N. M. July 27, 1939  
Dr. W. H. Livingston, Santa Fe, N. M. May 25, 1940

Respectfully submitted,

L. B. COHENOUR, M. D.  
Secretary-Treasurer.



ANNUAL REPORT OF FINANCES  
by SECRETARY-TREASURER

May 27, 1940.

Council New Mexico Medical Society,

Gentlemen:

I hereby submit a report of the financial affairs of the New Mexico Medical Society, ending this date:

Balance on hand at annual report, May 11, 1939.....	\$2121.16
Delinquent dues collected from 41 members.....	410.00
Annual dues collected from 235 members for 1940.....	2350.00
Dues collected twice by mistake from Drs. Thompson and Masten .....	20.00
Total cash received to May 27, 1940 .....	\$4901.16

## DISBURSEMENTS

Reporter for 1939 meeting, balance of one-half fee.....	75.00
Secretary's Salary for 1939-1940 .....	300.00
Treasurer's bond for 1939-1940 .....	5.00
Southwestern Medicine for 257 members.....	514.00
Dr. R. O. Brown legislative fund for 269.....	1345.00
DeVeau Typewriter Shop for purchase of Underwood typewriter .....	108.00
Walsh Printing Co. (400 letterheads and 250-3c stamped envelopes) .....	15.00
" " " (300 3x5 plain cards).....	1.25
" " " 300-3c stamped envelopes.....	18.37
Albuquerque Nat'l. Bank (Check book and checks).....	2.73
Jessie Blessum (250 mimeographed letters).....	4.59
Western Union (24 telegrams to legislators in Washington, D. C. ....)	46.87
M. J. Poppen, Sec., Colfax Co. Society—Refund of dues paid twice, Dr. Thompson and Dr. Masten .....	20.00
Valliant Printing Co. (printing charter for Eddy Co. Society) .....	3.50
Reporter to state meeting, one-half in advance.....	75.00
Total disbursements .....	2534.52
Balance .....	2366.64

## OUTSTANDING INDEBTEDNESS

Southwestern Medicine for 1940 for 227.....	454.00
Secretary's salary for 1940-1941.....	300.00
Reporter for 1940 meeting, balance in full.....	75.00
Treasurer's bond for 1940-1941.....	5.00
Approximate total indebtedness .....	834.00
Expected balance after all bills are paid.....	1492.64

Respectfully submitted,

(Signed) L. B. Cohenour, M. D.,  
Secretary-Treasurer.

## COMMITTEE APPOINTMENTS AND REPORTS

## Committee on Necrology:

Dr. C. A. Miller (Las Cruces), Chairman  
Dr. Carl H. Gellenthien (Valmora)  
Dr. L. F. Elliott (Albuquerque)

## presented Resolution:

"WHEREAS, The New Mexico Medical Society has suffered the misfortune of losing four of its esteemed members by death during the past year,

Therefore, Be It Resolved, That this Society express its sincere regrets and extend its sympathy to the families of the deceased:

Dr. E. W. Johns, Albuquerque.....	March 24, 1940
Dr. D. D. Swearingin, Roswell.....	January 15, 1940
Dr. F. D. Vickers, Deming.....	July 27, 1939
Dr. W. H. Livingston, Santa Fe.....	May 26, 1940

Be It Further Resolved, That this Resolution be incorporated in the minutes of the Society and copies thereof sent to the families of the deceased members."

Action taken by Society—Resolution approved.

## Committee on Resolutions:

Dr. Allen P. Terrell (Hobbs), Chairman  
Dr. Wallace P. Martin (Clovis)  
Dr. H. L. January (Albuquerque)

## presented Resolutions:

## Resolution No. 1

WHEREAS, The New Mexico Medical Society is completing its three-day annual convention in the City of Albuquerque, and

WHEREAS, It has during its stay here been the recipient of every courtesy and consideration possible, from the Hilton Hotel which has made its stay more pleasant and more profitable,

Now, Therefore, Be It Resolved That: The New Mexico State Medical Society extends its thanks to the Hilton Hotel for their many courtesies and outstanding hospitality,

And Be It Further Resolved That This Resolution be spread upon the minutes of the meeting of the Society and copy sent to the above mentioned hotel.

## Resolution No. 2

WHEREAS, The officials of the City of Albuquerque have contributed immeasurably to the enjoyment of our stay in the city, and

WHEREAS, They have unstintingly given an added measure of consideration for the many infractions of municipal rules and regulations, and

WHEREAS, We are profoundly cognizant of our unworthiness of these many courteous benefactions,

Now, Therefore, Be It Resolved, That we do hereby make this feeble effort to repay at least the interest on their doubtful investment in our civic behavior,

And Be It Further Resolved, That a copy of this Resolution be sent to the Legislative, Judicial and Executive branches of the Municipal Government of the City of Albuquerque.

## Resolution No. 3

WHEREAS, The Bernalillo County Medical Society, by dint of hard work, coupled with a sincerity of purpose rarely equaled, has cooperatively rendered a program of incomparable benefit to the State Medical Association of New Mexico, and

WHEREAS, They individually and collectively have expressed a quality of fraternal and civic solicitude and hospitality to all members of the medical profession assembled here,

Now, Therefore, Be It Resolved, That the sincere appreciation of their efforts and success and accomplishment be and is hereby expressed by the Resolution Committee, and

Be Is Further Resolved, That copies of this Resolution be sent to the president of the Bernalillo County Medical Society and a copy retained for the archives of the State Society.

## Resolution No. 4

WHEREAS, The Fifty-eighth Annual Meeting of the New Mexico Medical Society has been characterized not only by a scientific program of great worth but likewise by outstanding social enjoyment,

AND WHEREAS, We as members of the New Mexico Medical Society appreciate the great contribution made by the Ladies Auxiliary to the success of the meeting,

Now, Therefore, Be It Resolved, That the New Mexico Medical Society express its heartfelt appreciation and thanks to the ladies of the members of the Bernalillo County Medical Society for their unremitting and very successful efforts, which have so greatly contributed to the success and enjoyment of this meeting.

Signed:

ALLEN P. TERRELL,  
WALLACE P. MARTIN,  
H. L. JANUARY,

Committee.

New Mexico Medical Society

In Annual Session at Albuquerque, New Mexico  
May 28, 1940.

Action taken on Resolutions—approved.

## COMMITTEE APPOINTMENT

## Committee on Public Policy and Legislation:

Drs. R. O. Brown (Santa Fe), Chairman  
 C. H. Gellenthien, Valnora  
 J. M. Doughty, Quay  
 J. M. Winchester, Clayton  
 H. L. Watson, McKinley  
 W. A. Gekler, Bernalillo  
 R. L. Bradley, Chaves  
 C. D. Elliott, Colfax  
 W. P. Martin, Curry  
 L. S. Evans, Dona Ana  
 A. P. Terrell, Lea  
 J. C. Mitchell, Grant  
 G. T. Colvard, Luna  
 A. C. White, At Large

## ELECTION OF OFFICERS

President-elect—Dr. Carl Mulky, Albuquerque.

Vice-president—Dr. W. P. Martin, Clovis.

Secretary-Treasurer—Dr. L. B. Cohenour, Albuquerque (Re-elected).

Councillors for Three Years:

Dr. J. E. J. Harris, Albuquerque.

Dr. C. A. Miller, Las Cruces (Re-elected).

Delegate to A. M. A.—Dr. H. A. Miller, Clovis.

Alternate—Dr. W. B. Cantrell, Gallup.

Meeting Place 1941—Raton.

Board of Managers, Southwestern Medicine (Appointed by the Council):

Dr. George T. Colvard, Deming.

Dr. W. B. Cantrell, Gallup.

## SOCIAL FEATURES AND NOTES

Guests on arrival at headquarters in the Hilton Hotel were greeted by Mmes. Carl Mulky, J. D. Lamon and B. F. Roberts.

On Monday evening, the ladies were guests of the Women's Auxiliary at a buffet supper at the Alvarado Hotel, thus leaving the members of the sterner sex free to attend the traditional buffet supper and smoker, without which the Annual Meeting would be incomplete.

At the Smoker, the physicians were entertained by Dr. Richard L. Sutton, Jr., of Kansas City, who gave a very delightful and vivid description of his trip to the Arctic. Interesting accounts of a bullfight in Mexico City were portrayed by Dr. J. R. Jeager of Denver. Before "Auld Lang Syne," other features were presented and thoroughly enjoyed.

On Tuesday afternoon, a tea was given at the Alvarado Hotel in honor of the wives of the visiting physicians, with Mrs. J. W. Hannett in charge, assisted by Mmes. Carl Mulky, L. F. Elliott and P. G. Cornish.

From 5:30 to 8 p. m., Dr. M. K. Wylder was host at his home for all doctors and visitors in the city for the convention preceding the Dinner Dance. In the absence of Mrs. Wylder, who was ill and a patient at the St. Joseph Hospital, Mrs. Carl Mulky and Mrs. J. Justin de Praslin acted as hostesses.

The Dinner Dance, held at the Hilton Ballroom, on Tuesday evening, was also a very enjoyable occasion, and enthusiastically participated on by the older members as well as the younger set.

Dr. and Mrs. Clay Guinn of Carlsbad, formerly of Albuquerque, were house guests of Mr. and Mrs. Allen M. Tonkin.

Dr. and Mrs. Philip Travers of Santa Fe were guests of Dr. and Mrs. Mark P. Beam.

Dr. Frederick Wetherell, professor of surgery at Syracuse University, was the guest of Dr. and Mrs. Harry Schoeneck.

Dr. and Mrs. Dan Stine of Columbia, Mo.; Dr. B. Raney of Los Angeles, and Dr. Richard Sutton, Jr., of Kansas City, were house guests of Dr. and Mrs. M. K. Wylder.

On the eve of the convention, word was received of the death of Dr. W. H. Livingston of Santa Fe, who had been a prominent member of the Society for many years. Dr. Livingston had been a regular attendant at the Annual Meetings and news of his passing came as a shock to his many friends at the convention.

Unusually fine exhibits of the latest surgical equipment were on display around the mezzanine floor of the Hilton Hotel, the various scientific and commercial exhibitors showing motion and technical films and giving demonstrations of treatment methods.

Dr. W. B. Cantrell, Gallup, early earned the sobriquet of "Speed" by his efficient technique in speeding up proceedings and handling the order of the day as presiding officer. On the morning of the last day it seemed as if the closing sessions must drag on account of the big Coronado Centennial Parade and possible lack of attendance, but "Speed" was equal to the occasion and the meeting went through as per schedule without his threatened solo, "Springtime in the Rockies."

Among the out-of-state visitors were two "old faithfuls" who regularly attend the New Mexico meetings—Drs. Crum Epler (Pueblo, Colo.) and Paul Gallagher, El Paso, Tex. While perhaps not as active participants in discussing scientific papers as in former days, they still go in and pitch in their praise or censure is aroused.

The boys from Gallup had their usual bit of fun and a good laugh when, with the aid of the genial hotel clerk, they connived to have Dr. Paul assigned to room No. 606.

Looking over the register, the following names appear:

Drs. Anthony, William, Gallup, N. M.  
 Adams, F. S., Pueblo, Colo.  
 Adler, S. W., Albuquerque, N. M.  
 Austin, Frank H., Carlsbad, N. M.  
 Ambler, C. J., and wife, Mountainair, N. M.  
 Batson, C. C., McLean, Tex.  
 Bernstein, S. L., Santa Fe, N. M.  
 Bowen, Sarah, Dixon, N. M.  
 Berchtold, V. E., and wife, Santa Fe, N. M.  
 Bielinski, H. E., Vaughn, N. M.  
 Breck, Louis W., El Paso, Tex.  
 Burton, S. L., Albuquerque, N. M.  
 Bassel, P. M., and wife, Temple, Tex.  
 Bumpus, H. C., Pasadena, Cal.  
 Beeson, C. F., Roswell, N. M.  
 Brown A. E., Tucumcari, N. M.  
 Bradley, R. L., Roswell, N. M.  
 Blair, H. H., and wife, Tucson, Ariz.  
 Beam, M. P., Albuquerque, N. M.  
 Berk, J. Henry, Albuquerque, N. M.  
 Ballenger, I. B., Albuquerque, N. M.  
 Brown, R. O. and wife, Santa Fe, N. M.  
 Bass, H. L., Albuquerque, N. M.  
 Balyeat, Roy M., Oklahoma City, Okla.  
 Brehmer, H. L., Albuquerque, N. M.  
 Cohenour, L. B. and wife, Albuquerque, N. M.  
 Connor, Paul J., Denver, Colo.  
 Campbell, E. A., Gallup, N. M.  
 Cornell, H. M. and wife, Dulce, N. M.  
 Cantrell, W. B. and wife, Gallup, N. M.  
 Colvard, G. T. and wife, Deming, N. M.  
 Cornish, P. G., Albuquerque, N. M.  
 Curtis, H. B., Santa Fe, N. M.  
 Clausen, A. R., Albuquerque, N. M.  
 Dixon, George, Tucson, Ariz.  
 Epler, Crum, Pueblo, Colo.  
 Elliott, L. F., Albuquerque, N. M.  
 Elliott, C. B., Raton, N. M.  
 Evans, A. J., Santa Fe, N. M.  
 Espinosa, Tobias, Espanola, N. M.  
 Farness, O. J., Tucson, Ariz.  
 Fiske, Eugene W., Santa Fe, N. M.  
 Finney, R. H., Pueblo, Colo.  
 Frisbie, Evelyn F., Albuquerque, N. M.  
 Fall, H. V., Roswell, N. M.  
 Gardero, J. L., Albuquerque, N. M.  
 Gwinn, Clay and wife, Carlsbad, N. M.  
 Goldbloom, I., Tucumcari, N. M.  
 Gekler, W. A., Albuquerque, N. M.  
 Garent, H. W., Albuquerque, N. M.  
 Gallenthien, C. H. and wife, Valmora, N. M.  
 Gallagher, Paul and daughter, El Paso, Tex.  
 Gonzales, S. M., Santa Fe, N. M.



Glasier, W. F., Carlsbad, N. M.  
 Glere, C. N., El Paso, Tex.  
 Goodwin, Frank, El Paso, Tex.  
 Gore, G. J., Albuquerque, N. M.  
 Hnikle, R. F., San Benito, Tex.  
 Hannett, J. W., Albuquerque, N. M.  
 Harris J. E. J., Albuquerque, N. M.  
 Hunt, Verne C., Los Angeles, Cal.  
 Hemming, L. S. and wife, Bernalillo, N. M.  
 Hollis, R. G., Taos, N. M.  
 Hart, C., Dawson, N. M.  
 Hart, George A., Albuquerque, N. M.  
 Johnson, B. A., Santa Rita, N. M.  
 Jordan, S. I., El Paso, Tex.  
 January, H. L., Albuquerque, N. M.  
 Jaeger, J. R., Denver, Colo.  
 Johnson, L. W. and wife, Roswell, N. M.  
 Jackson, Robert L., Iowa City, Iowa.  
 Johnson, H. B. and wife, Hot Springs, N. M.  
 Kessler, Claude C., Albuquerque, N. M.  
 Kaser, W. E., Las Vegas, N. M.  
 Kisner, J. C., Albuquerque, N. M.  
 Keyser, B. B. and wife, Madrid, N. M.  
 Lamon, J. D., Albuquerque, N. M.  
 Lawrence, G. P., Albuquerque, N. M.  
 Lazard, E. M., Los Angeles, Cal.  
 Long, Julian O., Albuquerque, N. M.  
 Lovelace, W. R., Albuquerque, N. M.  
 Leslie, Fred, Hot Springs, N. M.  
 Lawrasun, D. L., Albuquerque, N. M.  
 Lingerfelter, G. P. and wife, Denver, Colo.  
 Levin, Dr. A. L. and wife, New Orleans, La.  
 Lynch, K. D., El Paso, Tex.  
 Marshall, I. J. and wife, Roswell, N. M.  
 Maynard, Carl, Pueblo, Colo.  
 Miller, C. A., Las Cruces, N. M.  
 Mendelson, R. W., Albuquerque, N. M.  
 Morrison, George, Roswell, N. M.  
 Martin, Wallace P., Clovis, N. M.  
 Mortimer, H. M., Las Vegas, N. M.  
 Maldonado, Jose and wife, Santa Fe, N. M.  
 McIntyre, E. F., and wife, Santa Fe, N. M.  
 Murphy, A. G., Ignacio, Colo.  
 Montenyohl, E. A., El Paso, Tex.  
 Moir, J. G. and wife, Deming, N. M.  
 Mitchell, John C. and wife, Silver City, N. M.  
 Mason, C. H. and wife, El Paso, Texas  
 Multhauf, A. W., El Paso, Texas  
 Mulky, Carl, Albuquerque, N. M.  
 Monaco, D. F., Gallup, N. M.  
 Miller, H. A., Clovis, N. M.  
 Miles, L. M., Albuquerque, N. M.  
 McBride, W. E., Las Cruces, N. M.  
 Matthews, E. C., Albuquerque, N. M.  
 Myers, John W., Albuquerque, N. M.  
 Olsen, O. E., Albuquerque, N. M.  
 Pattee, G. J. and wife, Denver, Colo.  
 Pate, H. D., Carlsbad, N. M.  
 Peters, L. S., Albuquerque, N. M.  
 Pansman, W. J. and wife, El Paso, Tex.  
 Phillips, K. J., Temple, Tex.  
 Patterson, J. H., Albuquerque, N. M.  
 Pousman, R. H., Rehoboth, N. M.  
 Peacock, W. H. and wife, Farmington, N. M.  
 Rife, D. W., Santa Fe N. M.  
 Rice, L. T.  
 Rosenbaum, M. G., Albuquerque, N. M.  
 Roberts, B. F., Albuquerque, N. M.  
 Royer, E. E., Albuquerque, N. M.  
 Radcliffe, W. D. and wife, Belen, N. M.  
 Riley, R. M., Albuquerque, N. M.  
 Raney, R. B., Los Angeles, Cal.  
 Sutton, Richard L., Jr., Kansas City, Mo.  
 Smith, W. G.  
 Schaff, B., Santa Fe, N. M.  
 Scott, A. C., Jr., Temple, Tex.  
 Stofor, J. W., and wife, Gallup, N. M.  
 Stevenson, W. H. and wife, El Paso, Tex.  
 Slarna, J., Las Vegas, N. M.  
 Speed, H. K., Jr., Clovis, N. M.  
 Salsbury, C. G., Ganado, Ariz.  
 Sethman, Henry T. and wife, Denver, Colo.  
 Stewart, A. B., Albuquerque, N. M.  
 Smith, Hugh, Memphis, Tenn.  
 Solland, Albert, Los Angeles, Cal.  
 Stine, Dan G. and wife, Columbia, Mo.  
 Tarn, J. D., Jr., Albuquerque, N. M.  
 Travers, P. L., Santa Fe, N. M.  
 Turner, J. P., Carrizozo, N. M.  
 Tucker, G. E. and wife, El Paso, Tex.  
 Thearle, W. H., Albuquerque, N. M.  
 Townley, B., St. Louis, Mo.  
 Terrell, A. P., Hobbs, N. M.  
 Trombley, R. A. and wife, Albuquerque, N. M.  
 Taurez, A. J., Albuquerque, N. M.  
 Thompson, L. A., Springer, N. M.  
 Uhley, P. M., Albuquerque, N. M.  
 Voorhies, V. V., Dixon, N. M.  
 Van Atta, J. R., Albuquerque, N. M.  
 von Briesen, F. D., El Paso, Texas.  
 Wittwer, W. F. and wife, Los Lunas, N. M.  
 Wier, D. T., Belen, N. M.  
 Williams, D. B., Santa Fe, N. M.

Ward, E. C., Santa Fe, N. M.  
 Watson, H. T. and wife, Gallup, N. M.  
 Williams, J. O., Roswell, N. M.  
 White, A. C., Hot Springs, N. M.  
 Wetherell, Fred S., Syracuse, N. Y.  
 Walker, Glen, and wife, Wheeler, Tex.  
 Watts, R. E., Silver City, N. M.  
 Woolston, W. H., Albuquerque, N. M.  
 Werner, W. I., Albuquerque, N. M.  
 Wylder, M. K., Albuquerque, N. M.  
 Zolk, W. J., United Pueblo Agency.

## LABORATORY ESSAYS

Mr. H., age 22, was seen on June 12, 1940, for the first time. He was complaining of pain in the right lower quadrant. There was a history of a large picnic meal eaten the previous day, which had produced fullness and discomfort that gradually progressed to nausea and vomiting several hours after eating. Thereafter he felt better and slept fairly well.

On examination there was no fever and abnormality of the pulse. There was tenderness over the right lower quadrant on deep pressure, but no rigidity. The nausea had ceased and there had been no recurrence of the vomiting. The urine was normal. The blood count was: Total white cells, 9,600; lymphocytes, 23%; metamyelocytes, 1%; stab forms, 17%; mature polys, 59%.

Observed for several hours, there was no change in the clinical picture. A repeat blood count was: Total white cells, 8,500; lymphocytes, 21%; metamyelocytes, 1%; juveniles, 3%; stab forms, 18%; mature polys, 57%.

Surgical interference was decided upon, largely influenced by the definite and progressive immaturity of the leukocytes.

On operation a definitely inflamed appendix was found and removed. Microscopic section showed the typical picture of acute inflammation with diffuse infiltration of leukocytes.

This case is, of course, trite, and the experience has been repeated many times by all surgeons. The point for emphasis and comment concerns the blood count.

For many years we have been aware of variations in the morphology of polynuclear neutrophile leukocytes of the blood. We have come to learn that these variations are no more than expressions of the age of the cell, coupled with its reaction to noxious stimuli.

The age variations express themselves mainly in the configuration and character of the nucleus, while the toxic effects are chiefly reflected by changes in the cytoplasm.

One finds that there is a graduated development from the first recognizable neutrophilic cells (premyelocyte) to the typical mature neutrophile with a multilobulated nucleus. There is no sharp dividing line between the various stages of this development. Therefore, the cells are classified according

to the typical mid point in each stage as myelocyte, metamyelocyte, juvenile, stab form, and mature polynuclear neutrophile. When the neutrophile cells are thus classified in routine differential counts the pertinent information available to the clinician is greatly increased. In many instances it is only in this classification where any variation from the normal is encountered. Thus a blood reported as: Total white cells, 9,000; lymphocytes, 25%, and polynuclears, 75%, is well within normal limits and is often misleading. The same count broken down thus: Total white cells, 9,000; lymphocytes, 25%; metamyelocytes, 2%; juveniles, 5%; stab forms, 10%, and mature polys, 58%, creates an entirely different picture and indicates definite stimulation to the bone marrow, most probably due to infection. A knowledge of the immaturity of the leukocytes is valuable in many ways, not only in diagnosing questionable infection, but serving also as a prognostic aid during the course of many infections. It is an almost infallible aid in judging a patient's ability to defend himself against infection, often indicating accurately when it is necessary to employ artificial aid to stimulate the bone marrow to greater activity.

These facts have been known, of course, for a number of years, and it is therefore surprising that so many times reports of blood counts make no mention of the degree of immaturity of the leukocytes. The illustrative case and the above remarks adequately indicate the value of this relatively simple addition to routine blood studies and should prompt physicians to insist upon utilizing this further assistance from the clinical laboratory.

L. O. Dutton, M. D.

## COMMUNICATIONS

Sir:

Concerning the article on page 202 of the June issue of *SOUTHWESTERN MEDICINE*, we would like to offer a correction in the infant mortality statistics which were mentioned. The first paragraph of that article should read as follows:

In Arizona in 1938, 98.8 babies out of each one thousand born alive died before they reached the age of one year.

Enclosed is a vital statistics bulletin which deals with vital statistics for the year 1939. You will notice that the infant mortality rate is 87.4, a decrease of 11.4.

We would appreciate it very much if you would mention this error in vital statistics. The original mistake was made on the press release which was sent from this department for the month of May.

F. P. PERKINS, M. D.,  
State Superintendent of Health.

## NEWS

### General

Classification of physicians for military service has already begun, according to a statement in a recent issue of the *New York State Journal of Medicine*, official organ of 17,300 practicing physicians of New York state.

Dr. James M. Flynn, of Rochester, president of the Medical Society of the State of New York, publishers of the journal, announced that the society stands ready to place all its facilities at the service of the government in time of national crisis.

Dr. Flynn, himself an officer in the World War, named as members of a committee: Dr. Samuel J. Kopetsky, New York City, chairman, president-elect of the society; Dr. Louis I. Bauer, Hempstead, and Dr. Edward T. Wentworth, Rochester, all of whom saw service as military medical officers in what Dr. Flynn called "World War No. 1."

Dr. Kopetsky announced that the committee of which he is chairman has approved a state-wide survey to provide additional officers for the National Guard, or national army, and to furnish medical and sanitary service to industry on a war basis. He said that other matters for the committee's attention included care of refugees and exiled British and French children. "In the emergency of war," said Dr. Kopetsky, "drafts on the physicians of the state must be conducted in such a way that no community is deprived of needed specialists or experts, and medical schools and hospitals will not be stripped of competent personnel."

"We must arrange matters," continued Dr. Kopetsky, "so that the doctors who serve the country shall have their practice and personal interests safeguarded by their county societies. Finally, when the emergency is over, it should be the responsibility of the profession to effect a properly guided demobilization to the end that the same type of high-grade medical care which our people now enjoy, under the impetus of private initiative and enterprise, may become again our accustomed medical practice."

There will be only one written examination given by the American Board of Ophthalmology during 1941. This will be held in various cities throughout the country on March 8.

Candidates enrolled in the preparatory group who have been advised that they will be eligible for examination during 1941 should make application at once to take this written examination.

Application must be made on the regular blanks provided for the purpose and must be received in the board office before December 1, 1940.

Oral examinations for 1941 will be held in Cleveland, Ohio, during May or June, with the deadline for case reports February 1, 1941. Oral examina-



tions also will be held in October at a place to be announced later, with the deadline for case reports July 1, 1941.

An examination also will be held on the Pacific Coast during 1941, providing a sufficient number of candidates make application for this special examination.

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The nineteenth annual scientific and clinical session of the American Congress of Physical Therapy will be held September 2 to 6, inclusive, at Hotel Statler, Cleveland, Ohio. This year there will be a departure from the usual arrangements, in that the mornings will be devoted to an instructional seminar with the scientific program presented afternoons and evenings. This enables physicians to economize on time by attending both the instruction course and the annual convention during the same week. The entire instruction schedule is elective in character. Registrants may pursue only the individual courses they desire. The complete course consists of 12 lectures from a diversified list of 48. The scientific program itself consists of papers, demonstrations and motion pictures covering every branch of physical therapy. There will be a separate scientific program covering eye, ear, nose and throat subjects. Write for schedule, fees, etc., to the American Congress of Physical Therapy, 30 N. Michigan Ave., Chicago, Ill.

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The American Academy of Ophthalmology and Otolaryngology will hold its forty-fifth annual convention in Cleveland, October 6-11, with headquarters at the Hotel Cleveland.

In the past year arrangements have been made to extend teaching activities to young physicians just entering on specialization. Home study courses are being prepared for any of these young men who wish to take them, and their work will be supervised by members of the academy interested in improving the calibre of specialists in America.

The academy will honor Dr. Secord H. Large, Cleveland, who this year completes 30 years as comptroller of the organization. Dr. Large, as the honor guest of the meeting, will receive many special distinctions.

Immediately following the academy meeting, there will be a Pan-American Congress of Ophthalmology, October 11 and 12, which eye specialists from all the Latin-American countries are expected to attend.

Dr. Frank Brawley, Chicago, is president of the academy, and Dr. Frank R. Spencer, Boulder, Colo., is president-elect. Vice-presidents are Drs. Arthur W. Proetz, St. Louis; Joseph F. Duane, Peoria, Ill., and Charles T. Porter, Boston. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, is executive secretary.

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The United States Civil Service Commission has announced open competitive examinations to fill

positions of pathologist (medical), \$3,800 a year, and veterinarian (research), \$3,800 a year, in the Chemical Warfare Service, War Department, Edgewood Arsenal, Maryland. The salary in each case is subject to a 3.5% retirement deduction.

Applications must be on file in the commission's Washington office not later than September 9, 1940, if received from states east of Colorado, and not later than September 12, 1940, if received from Colorado and states westward.

For pathologist applicants must have completed a 4-year college course with major study in biology or chemistry or must have graduated from a recognized medical school, and must have had appropriate experience in pathology, either human or animal.

For veterinarian applicants must have completed a course leading to a degree in veterinary medicine in an accredited veterinary medicine college, and must have had research experience in the field of animal pathology, and experience in the practice of veterinary medicine, or meat inspection or disease control work.

Further information regarding the examinations, and the detailed requirements, are given in the formal announcement. Announcements and application forms may be obtained from the secretary of the Board of U. S. Civil Service Examiners at any first- or second-class post office, or from the U. S. Civil Service Commission, Washington, D. C.

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The United States Civil Service Commission has announced open competitive examinations to fill medical officer positions in the United States Public Health Service and Food and Drug Administration, Federal Security Agency; Veterans Administration; Civil Aeronautics Authority, Department of Commerce; and Indian Service, Department of the Interior.

The examinations cover three grades with salaries ranging from \$3,200 to \$4,600, subject to a deduction of 3.5% toward a retirement annuity. Applications must be filed with the United States Civil Service Commission, Washington, D. C., and will be rated as received until further notice.

Applicants must have been graduated with an M.D. degree from a recognized medical school, and must have had professional experience in one of the following optional branches: Aviation medicine; cancer research; cardiology; dermatology; eye, ear, nose and throat (singly or combined); general practice; industrial medicine; internal medicine and diagnosis; medical pharmacology; neuropsychiatry; pathology, bacteriology and roentgenology (singly or combined); public health; surgery; tuberculosis; and urology. For some positions in the Veterans Administration applicants for associate medical officer, paying \$3,200 a year, need not have had experience other than one year of internship. Applicants for the associate grade must not have passed their fortieth birthday, and for the

other two grades they must not have passed their fifty-third birthday.

Further information regarding the examinations, and the detailed requirements, are given in the formal announcement. Announcements and application forms may be obtained from the secretary of the Board of U. S. Civil Service Examiners at any first- or second-class post office, or from the U. S. Civil Service Commission, Washington, D. C.

### *El Paso*

The regular staff meeting and dinner of the Southwestern General Hospital was held Thursday, June 27, 1940, at 6:30 p. m., in the hospital auditorium. The program was as follows: "Ulcerative Colitis," Dr. F. P. Miller; discussion by Drs. J. J. Gorman and C. N. Giere.

A regular staff meeting of the Hotel Dieu Sisters' Hospital was held Tuesday, July 2, 1940, at 12:10 o'clock in the auditorium of the Nurses' Home. Luncheon was served. The program was as follows. "Perforated Gangrenous Appendix," Dr. J. A. Hardy; discussion by Dr. Paul Gallagher.

Dr. James J. Gorman, of El Paso, was elected vice-president of the Texas State Medical Association at its recent session in Fort Worth.

Drs. Cathcart and Mason announced the association of Dr. Maynard S. Hart, July 1, 1940.

The El Paso Medical and Surgical Clinic announced the association of Dr. James T. Fowler, Jr., July 15, 1940. Dr. Fowler limits his practice to pediatrics.

Drs. A. P. Black and I. M. Epstein announced their association and removal of offices to the Mills Bldg., July 8 1940.

Dr. Frank O. Barrett, of El Paso, was elected secretary-treasurer of the Texas Association of Medical Anesthetists for the coming year.

The regular monthly staff meeting and dinner of the Southwestern General Hospital was held Thursday, July 25, 1940, at 6:30 p. m., in the hospital auditorium. The program: "Intestinal Obstruction," Dr. R. B. Homan, Jr.

### *New Mexico*

Dr. J. T. Smith, of Gallup, New Mexico, has been awarded first prize in an art contest sponsored by the Physicians' Art Association in California. Dr. Smith will receive a gold cup for the best landscape in oil submitted to the first annual exhibition of the art association, held at Coronado, California. The cup was awarded Dr. Smith by the Upjohn Drug Company.

## MISCELLANY

### VOMITING IN INFANCY

1. Improper technic of feeding.
  - a. Aerophagia or air-swallowing.
  - b. Too frequent feeding.
  - c. Too much food.
2. Improper food.
  - a. Too dilute.
  - b. Too rich.
  - c. Spoiled (improper refrigeration).
  - d. Too tough curd formation.
3. Obstruction in the gastro-intestinal tract.
  - a. Esophageal atresia.
  - b. Pyloric stenosis.
  - c. Duodenal atresia or bands.
  - d. Anal atresia.
  - e. Severe constipation.
4. Infections.
  - a. Enteral.
  - b. Parenteral.
5. Disorders of the nervous system.
  - a. Intracranial abnormalities, congenital or acquired.
  - b. "The hypertonic infant"—pylorospasm.
  - c. Habit—rumination.
6. Allergy.

—*Tex. St. J. of Med.*

### ADMINISTRATION OF TETANUS ANTITOXIN

That the majority of the deaths in a series of twenty-eight cases of tetanus at the Children's Hospital in Los Angeles were the direct result of treatment and not caused by the disease itself, is the startling decision of Harry F. Dietrich.

This author concludes that the cause of death is the medullary and cerebral edema resulting from the administration of tetanus antitoxin into the subarachnoid space or into the vein. The administration in these two ways was always followed by a severe, and many times fatal, reaction, characterized by extreme hyperthermia, marked tachycardia, coma, irregular respirations and sudden death. In every instance death occurred in 36 hours, and in 84% within 3 to 14 hours after the first treatment. In other words, the intravenous or intrathecal injection of antitoxin converted the picture from one of tetanus to a highly fatal bulbar disease. The intramuscular injection of antitoxin is completely safe, and by itself adequate. When the tetanus is most severe, one initial dose of serum with adrenalin may be administered intravenously, but subsequent doses should be given intramuscularly only.

The administration of very liberal doses of sedatives is a most important part of the therapy in tetanus. Three to 4 grains of seconal every 3 or 4 hours control the convulsions in a 5-year-old child, but preserve the pharyngeal and cough reflexes.



In the majority of cases the wounds which cause tetanus in children are so trivial that they arouse no concern at the time they are inflicted, and there is no opportunity for prophylaxis. In the experience of the author the usual prophylactic dose of antitoxin (1,500 units) does not afford adequate prophylaxis in cases of compound fractures.

During the summer months when minor accidents are so common, the possibility of tetanus must not be forgotten, and adequate protection should be afforded the patient. Active immunization of children against tetanus at the time of diphtheria immunization should be encouraged. The hazard of intravenous or intrathecal therapy in the treatment of the patient with tetanus should be remembered.—*Jo. Iowa St. Med. Soc.*

#### PROTECTING INSURANCE IN WARTIME

In considering the problems of defense mobilization and those of possible future active war service, the matter of physicians' insurance arises. Physicians as a group depend more largely on insurance to protect their families and their old age than almost any other group of citizens.

Yet among those first called upon to volunteer their services are the physicians. To those who respond are given commissions of the rank of first lieutenant or captain with net pay sufficient to maintain, in many instances, the insurance programs that they have set up as their principal security. These insurance programs have been based on their earning capacity in civil life and frequently represent their only resource and the future security of their dependents.

As soon as the physician enters military service his accident and life contracts are jeopardized. This would presumably be true if his entry were only for a training period. However, in case no waiver of liability existed, as in the instances of the government war risk contracts of 1917-1918, there would still be the matter of premium default.

In these circumstances he might avail himself of one of the following plans:

1. Automatic extended insurance at the face value of the policy for a period dependent upon the amount of cash reserve in the policy. This constitutes a lapse of the policy and means that the physician must show new evidence of insurability upon his return and perhaps reinstate the policy at a new age level.

2. Automatic premium loan—whereby the company lends the insured his own money at 6% interest to pay the premiums when due, up to the point where the cash value is exhausted. It seems unlikely that in the depression period after his return he would be able to pay back this money or even to continue paying the 6% interest plus the premiums. Therefore, he would probably be forced to cancel the policy eventually and would have meanwhile sacrificed the savings represented by that portion of the cash value that has been spent.

3. A paid-up insurance policy, at a much reduced face value dependent upon the amount of existing cash reserve. This would automatically greatly reduce the protection to his family during his absence and would likewise ruin the future protection for his old age.

To provoke discussion of this subject, we suggest that there might be arranged a basis of transfer from private to government insurance at cost with credits for earned cash surrender values. For if military service is to become a fixture of American life as seems probable, it is as well now to contemplate a long-term program for physicians with respect to insurance.—*N. Y. State J. of Med.*

#### POSTGRADUATE EDUCATION

Important developments in the hospital internship, the hospital residency and the postgraduate educational opportunities for physicians in practice were suggested by the Commission on Graduate Medical Education whose final report was published on June 25. The commission, which was organized by the Advisory Board for Medical Specialties on December 4, 1937, is now bringing to a close its three-year study program. Its work has been financed by national foundations and interested professional organizations.

The internship, suggests the commission, should be considered as a basic preparation for the practice of medicine. It should round out and give practical application to the medical school course, and, hence, should be closely allied to undergraduate medical education. It should prepare young physicians adequately to begin general family practice and should provide them with the essential preparation necessary to undertake further study leading to the practice of a specialty. It should not attempt to train men for the specialties directly, and, therefore, the intern should not be given training in the detailed technics of the specialties.

To prepare the intern for general practice, he should have experience in internal medicine, pediatrics, obstetrics and gynecology, and surgical diagnosis, minor surgery and treatment of emergencies. Special attention in these fields should be given to preventive medicine and the care of chronic diseases, conditions of the aged and functional disturbances. The whole atmosphere should be educational in character, and he should learn by example as well as by precept.

The residency is defined by the commission as a prolonged period of study in one of the special fields which can be properly classed as graduate education, whether an advanced degree is granted or not. The commission warmly supports the recommendation of the specialty boards that adequate attention be given during the residency to the basic sciences as they relate to the various specialties. It suggests practical ways by which hospitals may provide this basic science training in their own laboratories or through arrangements with medical schools. The report suggests that

there is danger that too many residencies may be developed, and stresses that, in the best interests of the patient, high quality of teaching in the residency is now more important than a large increase in the number of residencies. The essentials of a satisfactory residency are listed in some detail, although the commission takes pains to point out that it does not wish to standardize residencies or put them in a strait-jacket.

Postgraduate education the commission defines as study intended to keep a physician abreast of his chosen field of practice but not intended to equip him to enter a new field. Separate and clearly defined types of work are recommended for general practitioners and for specialists. While there has been a marked and rapid increase in interest in the field of postgraduate medical education, there is still need for its further extension and for improvement in the type of opportunities offered. The report points out the advantages and disadvantages of the various types of training now provided.

The effect of the work of the specialty boards upon the practice of medicine is discussed in the report, which points out that these boards have provided a well defined yardstick for measuring an individual physician's competence in his specialty. Men in the specialties have been certified so rapidly that it soon will be possible for the great majority of the people of this country to have access to the services of certified specialists.

The entire report stresses the value of adequate training and points out that this will be reflected in improved care of patients.—*Committee on Graduate Education.*

PROCEEDINGS OF EL PASO COUNTY  
TUMOR CLINIC  
EL PASO CITY-COUNTY HOSPITAL

*Case 1.* S. L., a 33-year-old Mexican man with a tumor of the neck on the anterior aspect to the right of the midline, was in today for the first time.

DR. GOODLOE: This man was sent in by Dr. Hughes. The first symptom was five years ago,—a small pimple. (Patient later stated that he cut himself while shaving.) He first saw a doctor the first of this month and was advised to have it removed. The tumor is located on the right side of the neck at the level of the thyroid cartilage, anterior to the sternomastoid. It measures 25x4 cm. There is fixation to the skin. No ulceration or induration. The skin of other parts is free, soft, normal. Regional nodes negative. The tumor is soft and elastic, movable over underlying tissues, not tender or reddened. (After examining tumor)—It is probably cystic. I would aspirate first. There is a possibility of its being a branchiogenic or branchial-cleft cyst, and you wouldn't want to open it up without making sure.

DR. HOLT: I think it is probably sebaceous.

DR. FRAZIN: I think it is probably a sebaceous cyst. I would cut down on it and enucleate it.

Diagnosis: Probably sebaceous cyst.

Recommendation: Enucleation.

*Case 2.*—F. F., a 64-year-old Mexican woman with a group of small tumors in the neck below the left ear, was in today for the first time. Dr. Branch sent her in.

DR. PARKER: This patient first noticed a tumor in the neck on April 1 of this year. She says that in February she had all her teeth removed and seems to think this has some relation to the tumor. She complains of a small tumor about 3x5 cm. in diameter just below the left ear, but there are also several smaller tumors of the same nature lower down. They are soft and movable. There seem to be three together just below the main tumor, and then one below these, about 1½x1 cm. in diameter. They have not bled; there is no pain and they have not bothered her in any way. They are not connected in any way to the bone or the skin. Throat and ear appear to be all right.

DR. CATHCART: I would be suspicious of malignancy, although it could be an inflammatory condition that is subsiding.

DR. SPIER: Might be tuberculosis or carcinoma.

DR. BRANCH: There's no tuberculosis in the family.

DR. HOLT: It looks more like malignancy than tuberculosis to me.

DR. FRAZIN: I would say tuberculosis first.

DR. CATHCART: I say the same. I would suggest removal of one gland and biopsy.

DR. WAITE: Why not remove all of them? I am very suspicious of malignancy.

DR. CATHCART: You usually get more fixation in a malignancy. I think it is tuberculosis, but it may be a malignancy. She may have a primary lesion in the sinus that is causing it.

Diagnosis: Carcinoma or tuberculosis.

Recommendation: X-ray of sinuses, to be passed on by the Nose and Throat department. Then refer to surgery for extirpation of the masses in the neck.

*Case 3.* B. A., 75-year-old Mexican man, admitted June 29, 1940 at 8 a. m., expired same day at 9:15 p. m. Case presented by Dr. Parker.

DR. PARKER: This man, 75 years old, walked into the hospital on the morning of June 29. He complained of pain and swelling of the abdomen. He had a right inguinal hernia which had been present for over a year. It was easily reducible. He was nauseated and vomited green fluid. He was put to bed. Strangulated hernia was suspected. Hernia was reduced. We tried to get a flat plate of the abdomen, but he was too sick for a good plate to be made, so we put a Wangenstein suction tube down him and you could almost see the swelling in the abdomen go down. He stated after that that he felt much better. About that time Dr. Spier came out and we gave the patient digalin, ampule, and adrenalin ½ cc., and 200 cc.



25% glucose in the vein, and started 1000 cc. normal saline as hypodermoclysis. For thirty minutes or longer he was fairly comfortable, and then he started to complain of severe pain in the abdomen again. His blood pressure at that time was 85/60. His pulse became so weak that it was hard to feel. He continued going down hill and was pronounced dead at 9:15 that night. The autopsy report is as follows:

Body is that of a fairly well nourished Mexican man. No external injuries. Hernia on right side.

On opening the abdomen considerable turbid fluid is found. Peritoneal surfaces and small intestines bound together with fibrinous adhesions which will not separate easily. There is a portion of the ileum that is deeply injected. The hernia admits two fingers.

On examining the intestines there is found a perforation of the ileum, and the jejunum and the ileum are both distended. There is no sign of ulcer around this perforation, either inside or outside. In the wall of the jejunum there is a small metastasis. In the lower lobe of the liver, just above the gall bladder, there is a large growth which is firm and hard, about 8x10 cm. in diameter. The gall bladder contains a large stone. The upper margin is joined to the growth. There are also a few nodules in the edge of the mesentery where it is attached to the intestine. On section of the liver there are no other metastases present except those mentioned. The stomach is normal; on section no ulcers are found.

The prostate is enlarged. On removal it is shown to contain a hard nodule about 2 cm. in diameter which on section appears to be malignant.

The right lung is free, partially collapsed, and the left lung is bound down with fibrous adhesions and considerably collapsed. The heart is soft and flabby. The valves are normal. Kidneys: The right contains metastases in the surface of the cortex. Capsule strips easily, leaving a finely granular surface. Pelvis slightly dilated. Left kidney somewhat cystic; otherwise like the right except no metastases present.

Diagnosis: Carcinoma of the prostate with metastasis to right kidney, peritoneum, ileum and liver. Chronic cholecystitis and cholelithiasis.

Immediate cause of death: Apparently due to incarcerated hernia with perforation of ileum and general peritonitis. Slides were shown by Dr. Waite.

*Case 4.* S. G., 59-year-old Mexican housewife, admitted May 2, 1940, expired May 7, 1940. Case presented by Dr. Goodloe.

Dr. Goodloe: This patient was admitted to the hospital with complaints of enlarged abdomen for nine years, swelling of feet and ankles for one year and shortness of breath for one month.

On admission patient stated she had been examined by Dr. Olvera of El Paso in 1924 and told at that time that she had a pelvic tumor and advised to have operation. She visited the doctor at this time because of a massive uterine hemorrhage,

which was stopped. She had no recurrence of the hemorrhage and was perfectly well and refused operation, until 1931, at which time she developed a gradual enlargement of the abdomen, low in the abdomen. It increased very slowly over a ten-year period, and then suddenly began to grow very fast a few months ago. One year ago she began to have swelling of her right foot and ankle. This extended gradually so as to include the entire right leg, before there was any edema of the left leg. On admission both legs were swollen as tight as could be, and she had a massive pitting edema up to above the umbilicus.

Menstrual History: 1st period at 13. L.M.P. in 1928. Four pregnancies—3 children living. One died at 15 days.

On admission, patient was unable to lie flat in bed. Said she had had no shortness of breath until one month previous. Now the least exertion caused extreme shortness of breath. She complained also of nocturia, 2 or 3 times a night. No burning. Very offensive odor of urine, which is very dark in color.

Physical: Patient has temperature 98.2, pulse 112, respirations 22. She is a thin, malnourished Mexican woman, acutely ill, with a huge abdomen.

Head: Teeth poor, several missing. Skin of face dry and wrinkled. Eyes show bilateral immature cataracts. Mucous membrane pale.

Neck shows no lymphadenopathy. No tracheal tug. No thyroid enlargement.

Chest: Breath sounds exaggerated and bronchial in character over the right lower chest posteriorly. Some moist rales posteriorly.

Heart is pushed far lateral, p.m.i. in anterior axillary line in the 6th interspace. To-and-fro murmurs heard over all areas.

Abdomen is huge, measuring 5' 8½" in its greatest extent, and 4' 1" from the zyphoid process to the symphysis. The abdomen when patient is in sitting position hangs down between the legs. A tremendous and definite fluid wave is elicited all throughout the mass. There is an umbilical hernia present, and large dilated veins crossing the abdomen under the tightly stretched skin.

G. U.—Normal external genitalia. Pelvic examination impossible.

Skin, bones and joints, glandular and neuromuscular systems negative.

Working Diagnosis: Ovarian cyst.

Dr. Spier saw the patient and thought it was a malignancy.

On the day after admission a p.s.p. test showed marked reduction both quantitatively and qualitatively. Patient was comfortable and cheerful, although unable to lie flat in bed.

On the second day after admission 15,000 cc. of fluid was removed by Dr. Green by means of a trocar. Definite masses, firmer than the remainder of the tissues of the abdomen, were found on both sides, with a softer area in between. Patient looked good and could lie in bed; however, had a temperature of 99.2.

On the third day after admission 15,000 more cc. of fluid was removed by interne, flowing in a small slow steady stream about the size of a match for a period of about 2 hours. The fluid on both occasions was reddish and clear, with no signs of pus. It was stated at this time that malignancy was suspected by Dr. Green. Later in the day patient complained of feeling very bad. Temperature 100.4. Pulse 120. Vomiting.

The next day the patient was given a blood transfusion. She was in very poor condition. Pulse was so fast it could not be counted. She was vomiting and in apparent shock. Oxygen and stimulants were given.

The following day, May 7, 1940 (five days after admission) the patient expired.

#### AUTOPSY

Body is that of an old Mexican woman. Abdomen greatly distended. Two large tumors present—one on each side.

On opening the abdomen four or five gallons of straw-colored fluid escape, and two large tumors are present—one on each side, attached to the pelvis. On removal one of these tumors ruptured. The other one was removed intact and weighed 19 pounds. There are a few small nodules present on the outside walls, and a few on the inside walls. The tumors are filled with grayish yellow fluid mixed with thick sebaceous matter. On removing the tumors the uterus had to be severed, and on further examination it was found that the tubes were incorporated in the tumors. The uterus, except for being stretched, appeared normal.

There is intense congestion throughout the abdomen, and numerous small nodules present up around the liver and stomach. The omentum is infiltrated, and the parietal walls are also infiltrated with diffuse growth.

There is another hard mass in the midline, just above the attachment of the tumor, which is made up of a soft, nodule-like growth. There is also a large multilocular sac into which the sigmoid opens. This does not seem to be in any way connected with the other tumors. The spleen is about normal in size, and the liver, except for numerous growths on its outer surface, shows no gross lesions. The stomach is distended and flabby; otherwise no lesions.

On opening the chest the lungs are free and air-containing. The diaphragm is high, due to pressure from the abdomen. The heart presents no gross lesions. The kidneys appear normal. Several pieces saved for section.

Diagnosis: Bilateral cystic ovaries with numerous metastases.

June 12, 1940—Microscopic examination of tumor shows a new growth with large amount of fibrous tissue supporting a glandular growth. In places there are cystic areas filled with necrotic material.

Diagnosis: Adenocarcinoma of the ovaries.

DR. CATHCART: She must have had an obstruction higher up, around the liver, else why did she get all that fluid in the abdomen? You might

expect a certain amount of transudate; but where was all this fluid coming from?

DR. WAITE: I don't know.

Case 5. P. G., a 48-year-old Mexican man who was in the hospital from May 21, 1940 to May 26, 1940, with a diagnosis of complete obstruction of pylorus (carcinoma?). He refused operation and went home. He died at home on June 27, 1940, and an autopsy was done by Dr. Waite with the following findings:

Body is that of an emaciated Mexican man. No external injuries.

On opening the abdomen the stomach is greatly distended and bound down around the pylorus with adhesions.

On opening the stomach there is discovered a large cauliflower growth in the pylorus, extending up into the cavity of the stomach.

The liver is free, without any signs of metastasis. Chest not opened.

Diagnosis: Pyloric obstruction due to carcinoma.

DR. WAITE: This man came into the hospital complaining of inability to swallow solid food. G. i. examination showed a complete obstruction of the pylorus, and surgery was recommended but the patient refused. It was at the coroner's request that I did the autopsy, and I found a carcinoma in the pylorus that would have been one of the easiest things to take out that you ever saw. I did not know when I did the autopsy that it was the same man that we had seen in the hospital, or I would have examined the lungs for metastasis.

DR. CATHCART: This x-ray shows a dilated stomach.

DR. WAITE: It was very greatly dilated. That was why he couldn't swallow solid food; there was no room for it because the stomach was full.

DR. CATHCART: Dilated stomachs usually go with obstruction; as a rule with malignancy you get a contracted stomach.

DR. HOLT: This is a good example of the patients who get a thorough work-up and then refuse surgery. Why is it that when a patient is told he must have an operation right away he offers no objection, but when he is worked over several days or a week or so in order that accurate diagnosis can be established, he very often refuses the operation? Is it because they have time to think it over and ask the advice of friends and perhaps the patients in the adjoining beds?

DR. WAITE: I believe this man felt better after his stomach was washed out and he thought he would improve without the operation.

## BOOK NOTES

MEDICAL NURSING: by Edgar Hull, M.D., F.A.C.P., Clinical Professor of Medicine, Louisiana State University School of Medicine, Visiting Physician, Charity Hospital of Louisiana at New Orleans. Christine Wright, R.N., B.S., Graduate of Davis-Fischer Sanatorium, Atlanta, Georgia, Instructor of Nursing Arts, Charity Hospital School of Nursing, St. Mary Parish Health Unit and Experience Center, Franklin, Louisiana, 1939; and Ann B. Eyl, B.S., Assistant Dietitian, Cook County School of Nursing, Chicago, Ill.; formerly Instructor in Home Economics, University of Kentucky, Lexington, Therapeutic Dietitian, Charity Hospital of Louisiana, New Orleans, Dietitian, St. Vincent's Infirmary, Little Rock, Arkansas. Pp. 561 including index. Illustrations 168, including 11 color plates. Fabrikoid, Philadelphia, F. A. Davis Company, 1940.

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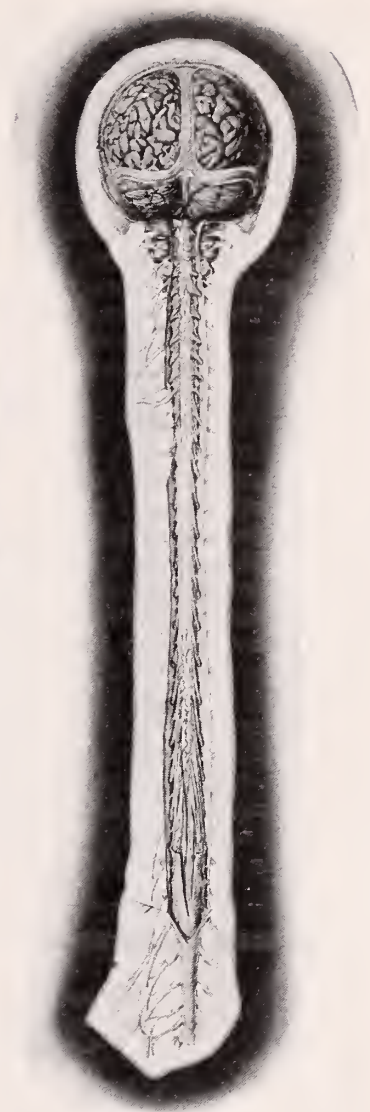
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This book has been well worked up. Many correlated references are given. A considerable portion of the book is devoted to general principles because "... if fundamentals are understood, details may be remembered much more easily than if they are merely memorized. . . ." All in all, this book is to be highly recommended.

—A. R.

MINOR SURGERY. By Frederick Christopher, S. B., M. D., F. A. C. S., Associate Professor of Surgery at the Northwestern University Medical School, Chicago; Chief Surgeon at the Evanston (Ill.) Hospital. With a foreword by Allen B. Kanavel, M. D., F. A. C. S. Fourth edition. Reset with 639 illustrations. Philadelphia and London: W. B. Saunders Company, 1940. Price, \$10.

This is the fourth edition of the most valuable textbook existing in the field of minor surgery. The book has been reset and a number of valuable illustrations added. There is no finer work in English that is so readily available as a reference.—M. P. S.

A TEXTBOOK OF PATHOLOGY. By W. G. MacCallum, Professor of Pathology and Bacteriology, The Johns Hopkins University, Baltimore. Seventh edition, thoroughly revised. 1302 pages with 697 illustrations. Philadelphia and London: W. B. Saunders Company, 1940. Cloth, \$10.

Here is the seventh edition of a textbook which is standard the world over. An understanding of disease must be predicated on a thorough knowledge of pathology. There is no better source of this knowledge than MacCallum's text. The book belongs in every physician's library.—M. P. S.

TOMORROW'S CHILDREN. Proceedings of the Southern Conference on Tomorrow's Children, held November 9, 10 and 11, 1939, at Atlanta, Georgia. Pp. 169. Paper. 75 cents. Birth Control Federation of America, 1939.

The book reports the proceedings of the first Southern Conference on Tomorrow's Children, held in Atlanta, Georgia, 1939. Members of the conference were addressed by leaders in the fields of sociology and medicine in the South. A portion of the conference was devoted to the problems of birth control.—M. P. S.

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\*"Treatment of Acute Anterior Urethritis with Silver Picrate," Knight and Shelanski, AMERICAN JOURNAL OF SYPHILIS, GONORRHEA AND VENEREAL DISEASES, Vol. 23, No. 2, pages 201-206, March, 1939.

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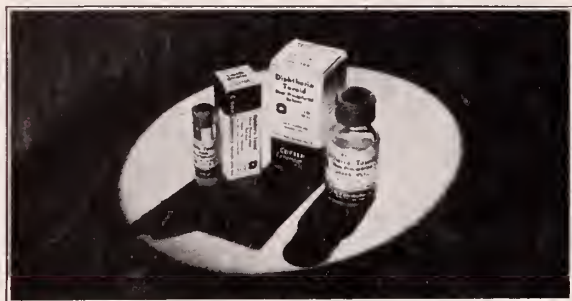
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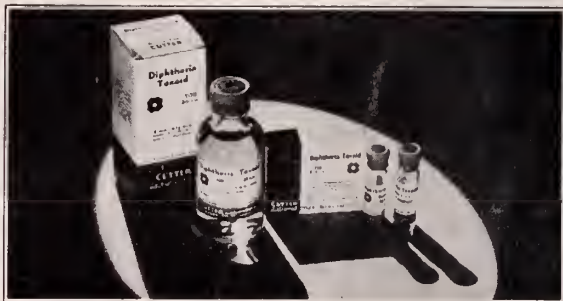
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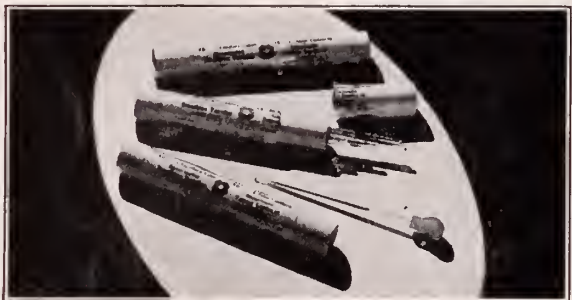
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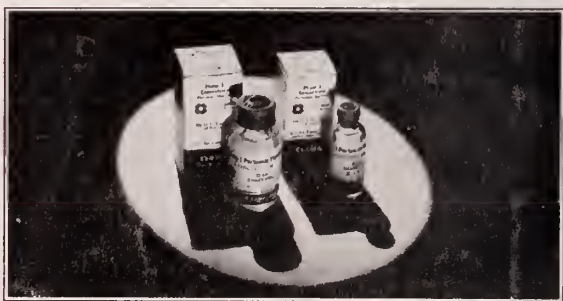
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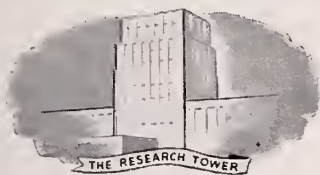
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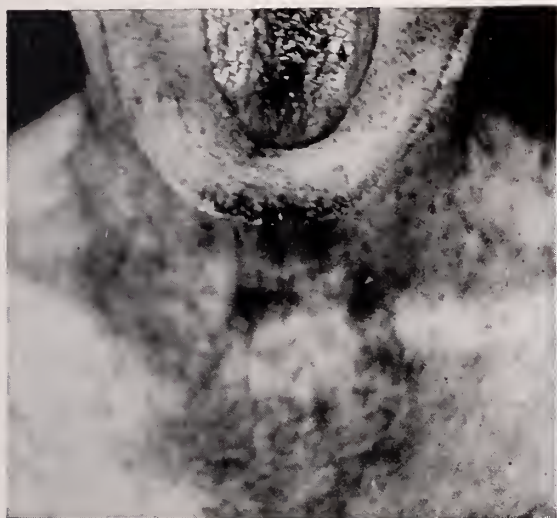


# STUDIES IN THE AVITAMINOSES



This page is the ninth of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A full color, two-page insert on the same subject appears in the August 17 issue of The Journal of the American Medical Association.

The scaling, symmetrical pellagrous dermatitis of the hands.



Casal's collar in a patient with advanced pellagra secondary to chronic alcoholism.

Illustration courtesy of Virgil P. W. Sydenstricker, M.D., University of Georgia Medical School, Augusta.



## The Dermatitis of Pellagra

The severe scaling dermatitis of the hands seen in most cases of advanced pellagra is pathologically identical with skin lesions developing elsewhere on the body surface. Microscopically, thickening of the skin, lymphocytic infiltration of the dermis, and hyaline degeneration of the intima of the smaller arterioles are observed. The early clinical changes consist of burning, tenderness, erythema, pigmentation, and mild vesiculation. The acute character of the eruption disappears after a variable period but if no treatment is instituted, the pigmentation becomes more intense and the scaling and desquamation

more severe. As with other pellagrous skin lesions, the dermatitis of the hands is bilateral and symmetrical, and is sharply demarcated from the adjacent normal skin.

The dermatitis which frequently appears on the neck is known as Casal's collar. The lesion assumes its peculiar distribution because of the provocative action of sunlight upon the skin of pellagrins. The neck, exposed to the influence of sunlight, is thus frequently the site of the pellagrous dermatitis. However, unexposed portions of the skin, notably the upper thighs and perineum, may become similarly involved.



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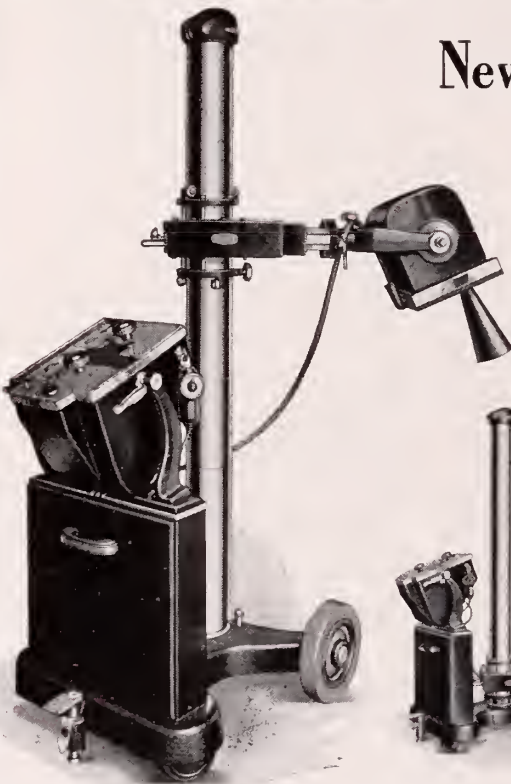
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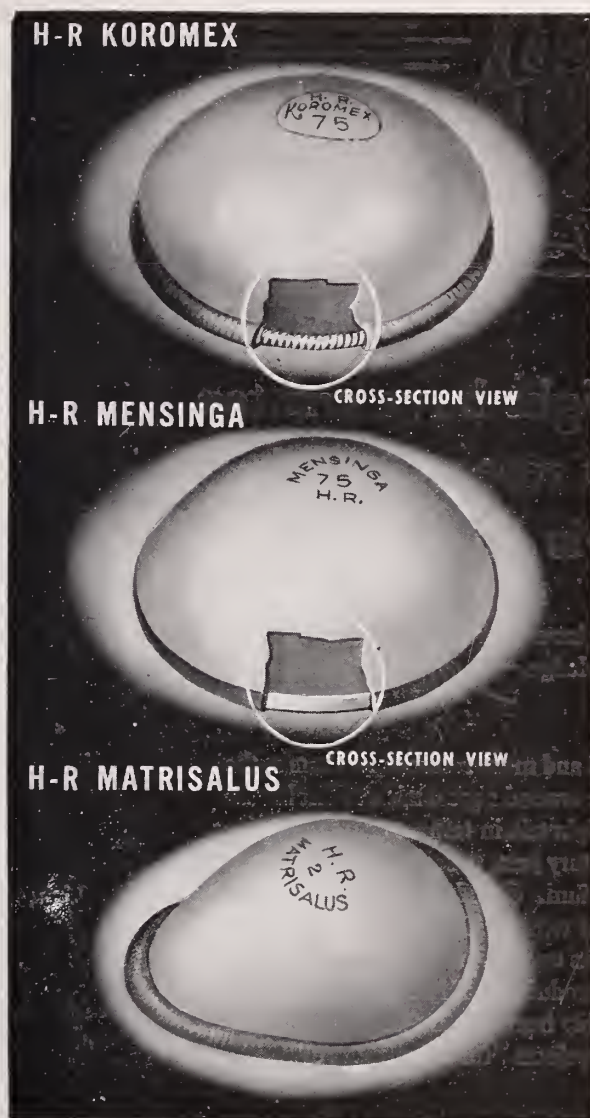
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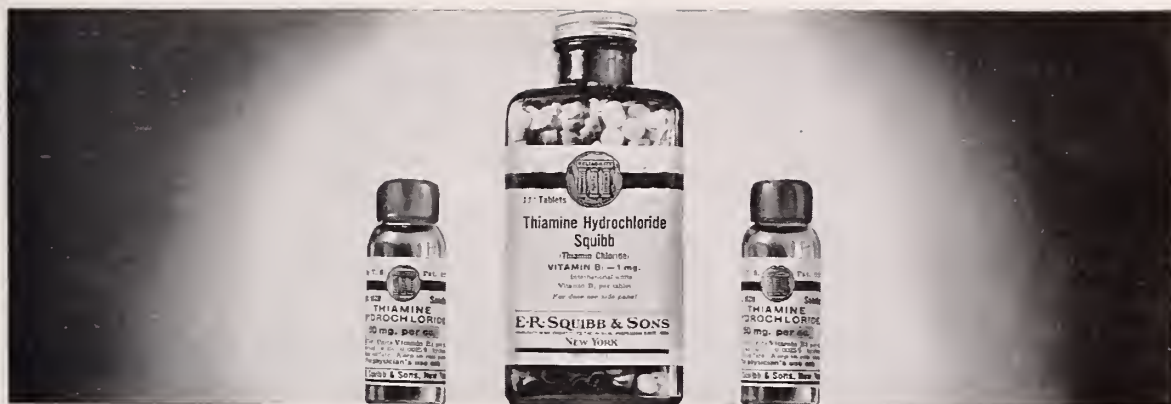


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THE SOUTHWESTERN MEDICAL ASSOCIATION

Vol. XXIV

EL PASO, TEXAS, SEPTEMBER, 1940

No. 9

## Masquerades of Bronchiogenic Carcinoma\*

WILLIAM S. MIDDLETON, M. D.,

*Madison, Wisconsin*

THE lengthened span of life is an obvious factor in the increased incidence of all neoplasms. Improved diagnosis and treatment have excited a growing interest in bronchiogenic carcinoma. Diagnostic consciousness, pathological as well as clinical, has contributed materially to the apparently gross increase in this carcinoma in recent years. Whether the accession be apparent or real, many authorities now rank this tumor second among the neoplasms (10-15 per cent of the total). At the Wisconsin General Hospital bronchiogenic carcinoma accounts for 5.9 per cent of the deaths from neoplasms coming to necropsy.

One of the contributory factors to the continued difficulty in the diagnosis of bronchiogenic carcinoma is the multiplicity of its clinical expressions. These manifestations may be pulmonary or extrapulmonary. Complicating details may assume a dominant importance on one hand, or the presenting pulmonary symptoms and signs may be deemed inflammatory or metastatic to a remote neoplastic lesion on the other. An appreciation of the wide range of these masquerades should be of assistance in unmasking the real offender.

Pulmonary tuberculosis is the most common error in diagnosis of bronchiogenic carcinoma.

### CASE REPORTS

*Case 1*—A. P., white male, 61 years old, dated his present illness to an acute respiratory infection three years previously. This illness led to bedfastness which continued to the time of admittance. The thorax had been aspirated by his family physician and a clear fluid withdrawn. A high fever at the onset subsided after about 10 days. The thoracentesis had relieved respiratory difficulty but he remained in bed because of weakness. A total of seven thoracenteses with corresponding relief of recurring hypsnoea was performed before admittance. There was very little expectoration of a thick, yellowish sputum. It was never blood streaked. Hoarseness had developed. Occasional night sweats were noted. The referring physician had diagnosed pulmonary tuberculosis and the patient was admitted for this reason. A weight loss of 34 pounds had occurred over the past 2 months. Past medical history established the occurrence of influenza 14 years before and pleurisy on two occasions.

The physical examination showed the following pertinent findings: Emaciation, dyspnea, subcy-

nosis of the nail beds and lips, slightly enlarged anterior and posterior cervical lymph nodes, prominence of the right chest, marked restriction of motion over the entire left side, dullness to percussion below the second left rib anteriorly and the third left rib posteriorly, absence of tactile fremitus, vocal resonance and breath sounds over the area of dullness on the left, hyperresonance with harsh breath sounds and a few fine crackling rales above this area of dullness. The right border of the heart was slightly displaced to the right. The heart tones were weak. The pulmonic second sound was greater than the aortic second sound. Repeated examinations of the sputum were negative for tubercle bacilli. X-ray of the chest showed the heart displaced to the right. There was a diffuse density occupying the left lung field. The right lung field showed multiple small discrete densities scattered throughout the lung from apex to base. The impression from x-ray study was miliary tuberculosis of the right lung with pleural effusion on the left. Three thoracenteses were done and a total of 1775 cc. of serosanguineous fluid was removed. Cultures of this fluid showed no growth. The temperature range during his hospital stay was from 96 to 101.8 degrees F. The patient died on the seventeenth day.

At necropsy the important findings were as follows: The left lung was covered with fibrous tags. Its consistency was firm and there were grey-whitish plaques spread over the entire external surface. Upon section greyish white nodules were found scattered throughout the lung. There was a confluence of these areas in some portions. Massive changes in the left lower lobe masked the bronchial tree and led to a suspicion of a primary carcinoma of the left lower lobe bronchus. The right lung showed similar but less marked changes. Nodules were noted in the epicardium, pericardium and both adrenals. Histologic study showed an adenocarcinoma of the bronchus. The metastatic nodules presented the same histologic structure.

In this patient recurrent pleural effusion, weakness, hoarseness, fever, night sweats and weight loss raised the suspicion of a tuberculous background. The x-ray changes did not weaken this position. The negative sputa and pleural cultures were ignored. It is entirely possible that a biopsy of the cervical lymph nodes would have concluded an antemortem diagnosis of bronchiogenic carcinoma.

*Case 2*—R. F., white male, 50 years old, complained of weakness succeeding an attack of influenza 15 months previously. At this time the physician told him that the right lung was markedly congested. The recovery was apparently incomplete, although he remained in bed only 2

\* From the University of Wisconsin Medical School.  
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weeks. A weight loss of 15 pounds attended this illness. In the judgment of the patient he had never regained his full strength, and vague gastrointestinal complaints followed the attack. Eleven months after the original illness the patient attempted to resume full work as a laborer, but experienced inordinate fatigue and anorexia. After a month he discontinued his work and called a physician, who found a massive effusion in the right pleural cavity. Aspiration removed 3 quarts of a reddish fluid which showed no tubercle bacilli. Three weeks later and 6 weeks later aspirations withdrew a pint and one-half pint of straw-colored fluid respectively. A peculiar mass had been observed on the top of the head for 6 months. Palpitation, dyspnea, flatulence after meals, muscle twitching and pain in the back with a total weight loss of 35 pounds developed over the period of illness. Suppurative arthritis from the trauma of a logging hook led to ankylosis of the left knee 25 years previously. The family history disclosed the occurrence of tuberculosis in a paternal uncle and a first cousin.

The important physical findings were the firm mass in left fronto-parietal region, 4x6 cm., attached to the underlying skull, the right side of the chest smaller than the left, excursion definitely limited on the right, tactile fremitus decreased below the second rib anteriorly and fifth vertebral spine posteriorly on the right, impaired resonance at the right apex, small area of tympany in the mid-axillary line, flatness below the second rib anteriorly and the fifth vertebral spine posteriorly on the right, bronchial breath sounds over entire right chest. The first impression was pulmonary tuberculosis with a pleural effusion and pneumothorax. From time to time the chest signs on the right altered and there were localized areas of wooden tympany in recumbent position changed to dullness in upright position, absent to bronchial to amphoric breath sounds and occasionally whispered pectoriloquy in such areas upon change of position. His temperature ranged from 96 degrees F. in the morning to 101 degrees F. in the afternoon. Stereoscopic x-ray of the chest showed some fibrous increase in vertebral, first and second interspace distributions, with some granular increase in density in the left first interspace. The dome of the left diaphragm was rounded, regular and slightly depressed. The right chest showed a peculiar cascading appearance of four separate fluid areas with an elliptical area of rarefaction above same. A diffuse density on the right obscured the heart and mediastinum, and below the diaphragm was obscured. The x-ray of the skull showed a large tumor in the soft parts over the right vertex, with an area of distinct bone destruction beneath. Repeated blood counts showed a hypochromic anemia with the hemoglobin as low as 50% and erythrocytes at 3,900,000. A polymorphonuclear leukocytosis of moderate degree, 93% of 14,950, prevailed. Repeated sputum examinations were negative for tubercle bacilli. A nodular growth appeared in the right anterior axillary line. This was removed for biopsy and proved to be adenocarcinoma. The diagnosis was changed to adenocarcinoma of the lung with metastases to the pleura, lymph nodes and skull.

Additional lymph nodes appeared in the right supraclavicular region and in the axillae. Hemoptysis and dyspnea became prominent symptoms, and the patient died on the twenty-eighth day of his hospital stay.

At necropsy the right lung was totally collapsed covered with a thickened pleura of cartilaginous consistency. Trabeculae of white cartilaginous-appearing tissue, particularly prominent in the sites of the interlobar fissures, penetrated the lung. The bronchi were markedly stenosed. Bronchial nodes were involved in a firm neoplastic mass of

cartilaginous density. At the base of the right lung there was a large mass of elastic tissue adherent to the body wall in this region. The diaphragm was 1.5 cm. thick on the right. The left lung showed only generalized emphysema and areas of hemorrhagic infarction. Microscopic study proved the neoplasm to be an alveolar type of epithelial growth. There was very little connective tissue stroma. Many tumor cells showed vacuolation and degenerative changes in the nuclei. There was some bone formation within the tumor and areas of dense fibrous tissue in others. Certain of the sections of the mass seemed to arise from the bronchial epithelium. Histologic sections of the liver and bronchial lymph nodes showed similar neoplastic changes.

The clinical course of this patient offers many points of interest. The family incidence of tuberculosis and the prior occurrence of suppurative arthritis naturally gave strength to the thought of a tuberculous etiology. Again recurrent pleural effusion, weakness, weight loss and fever supplemented the chest signs to support the diagnosis of pulmonary tuberculosis. The persistently negative sputa and the x-ray evidence of bone destruction in the cranium prepared the way for the correct conclusion when a biopsy of the lymph node clinched the diagnosis of adenocarcinoma of the lung. Among the important lessons taught by this experience is the advisability of a biopsy of any suspected lymph node, no matter how unpromising it may appear.

Next to pulmonary tuberculosis, abscess of the lung takes the questionable honor of second place among the erroneous diagnoses of bronchiogenic carcinoma.

*Case 3*—K. S., white female, 62 years old, complained of a cough which had troubled her at intervals for almost a year. Six to 8 weeks before admittance to the hospital, hoarseness had supervened. The cough, which had subsided in 3 or 4 weeks after the onset of the hoarseness, recurred and became productive of mucus. This type of sputum persisted until two nights before entrance, when after a fit of coughing she spat up a quart of pus, yellowish in color and possessing a very fetid odor. After this bout the cough was less severe, but the sputum was tinged with blood for a few days. The temperature ranged to 100 degrees F. for a few days and shortly after admittance was 101.6 degrees F. There had been a weight loss of 17 pounds in 3 months. Weakness was particularly conspicuous during the week before entrance, and there was a dull constant pain, aggravated by taking a deep breath, in the right lower chest. Night sweats recurred. There was vomiting on occasions. There were added malaise, postorbital headaches and intermittent chilliness.

To physical examination the findings of interest in the present relation were: Undernutrition, hot, dry skin, subcyanosis of the lips, prominent right supra- and infra-clavicular fossae, lag of inspiration on the right, decreased tactile fremitus below the sixth thoracic spine posteriorly and third interspace anteriorly on the right, dullness over the corresponding area to flatness in the right axilla, decreased to absent breath sounds and spoken voice over the area of dullness, bronchophony in the right lower interscapular area and persistent rales in both lung fields.

The urine contained a few coarse granular casts per ten low power fields. There was a mild hypochromic anemia with a hemoglobin of 60%, 3,740,000 erythrocytes, 25,350 leukocytes with 91% neu-



trophiles. The sputa were repeatedly negative for tubercle bacilli. X-ray of the chest showed a sharp scoliosis to the left in the upper dorsal region. The trachea was displaced to the right of the midline. There appeared to be a diffuse widening of the entire aortic arch. On the right there was a dense calcified shadow in extreme summit and below the fourth rib posteriorly. The lower portion of the lung field was obscured by marked increase in density, which faded off with feathery appearance extending up to the level of the second rib. This density completely obscured the diaphragm.

A tentative diagnosis of carcinoma of the right lower bronchus with secondary abscess formation was made and an alternative diagnosis of primary lung abscess in the right lower lobe was considered.

After a period of observation and supportive treatment, during which time the temperature gradually subsided from a maximum of 102 to 99 degrees F., the chest signs changed perceptibly. The dullness in the right axilla was not as extensive nor as absolute as previously. Loud bronchial breath sounds and whispered pectoriloquy appeared at the base. There was hemoptysis of a fluid dram of clotted blood. Sputa examinations thereafter showed no tubercle bacilli. Chest signs varied from time to time, but the evidences of excavation persisted and were confirmed by x-ray. A weight gain of 4½ pounds, together with the general subjective and objective improvement, led to the shifting of the clinical impression in support of pulmonary abscess rather than bronchiogenic carcinoma with secondary lung abscess.

After 4½ months the patient was readmitted with a history of a decrease in the cough and sputum and a further gain of 5 pounds in weight. Physical examination of the chest at this time showed reduction of the tactile fremitus at the right base posteriorly, impairment of percussion note below the third interspace anteriorly and seventh dorsal spine posteriorly, distant bronchial breath sounds over the upper right axilla, coarse rales medial to and below the angle of the right scapula, diminished breath and vocal sounds at the right base posteriorly. The x-ray of the chest on this admittance showed a decrease in the intensity of the clouding at the right base, and there was a suggestion of honeycombing in the right lower lobe. Lipiodol insufflation offered no diagnostic information. A bronchoscopic examination indicated atelectasis at the right base, but gave no cause for the same.

Four months later the patient was readmitted with an interval story of an increased cough with foul smelling sputum, and an afternoon rise of temperature to 100 or 101 degrees F. There had been a further gain of 3 pounds in weight. The chest signs included a lag in the respiratory excursion on the right, some impairment of the percussion note, dullness over the same area as previously, bronchial breathing in an area below the sixth rib posteriorly on the right, increased vocal resonance and pectoriloquy with many coarse rales over this area. The hemoglobin was 60%, 4,440,000 erythrocytes, 224,050 leukocytes with 82% neutrophils. This latter count continued to rise to 34,200 with 92% neutrophils. The sputa continued negative for tubercle bacilli. X-ray of the chest showed no appreciable change in the appearance of the right base, but an extension to the left, where soft linear shadows radiated from the hilum into the lung, and there was a rather diffuse area of increased density in the left midlung zone. Dr. L. W. Paul interpreted this extension to the left as neoplastic in origin. The temperature range on this admittance was 98 to 103 degrees F. The patient died on the eighth day.

At necropsy the right lung felt consolidated and cut with considerably increased resistance. The

superior lobe was partially consolidated, mottled grey-red in color, and contained only a slight amount of air. The lower lobe showed irregular consolidation and nodulation. The changes in the left lung were described as conglomerate tubercles just below the pleura in the upper lobe. The cut surface showed a disseminated miliary tuberculosis, according to the pathologist. The bronchial tree was irregularly dilated in both lungs. The anatomical diagnosis of bronchiectasis, broncho-pneumonia and miliary pulmonary tuberculosis was made. Histologic study of these sections showed no tuberculosis. The pulmonary process was diagnosed as bronchiogenic and broncho-pneumonia with multiple abscess formation.

In this patient the clinical diagnosis of bronchiogenic carcinoma was deserted in favor of abscess of the lung on grounds that temporarily seemed adequate. The interference with bronchial (and lymph) drainage and infection distal to the point of neoplastic obstruction not infrequently lead to symptoms and signs of infection that may be overwhelmingly impressive. In this patient the temporary release of the dammed secretions and the resolution of the resultant pneumonitis without due thought to its possible explanation led to the illusion of permanent improvement. Not only did the clinical course offer many diagnostic difficulties but the interpretation of the gross pathological picture also proved incorrect. This error of mistaking bronchiogenic carcinoma for tuberculosis at necropsy is not uncommon. Nor are the laboratory and other methods of diagnostic precision always helpful in this problem, as witnesses the following clinical experience:

*Case 4*—E. G., white male, 44 years old, complained of weakness which had begun 4 months previously. Advancing weakness and early fatigue led to discontinuance of work. An afternoon rise of temperature was noted, and there was some chilliness. Studies of the chest supported by x-rays showed no suggestive changes, and three sputum examinations were reported negative for tubercle bacilli. After bedfastness of 5 weeks the patient felt better, but shortly thereafter his symptoms recurred. The cough became productive of sputum, which was examined and again found to be negative. An x-ray study at this time was reported as showing a "pulmonary infection in the right base." A weight loss of approximately 15 to 20 pounds had occurred since the onset of symptoms. Fleetings were noted at the right costal margin.

To physical examination of the chest the right base showed distinct limitation of motion, dullness below the angle of the scapula extending in a forward slanting direction to the fifth rib anteriorly. A friction rub was heard over this area, but the breath sounds and vibratory phenomena were markedly reduced. An impression of carcinoma of the right lower lobe bronchus with atelectasis was made. The atelectasis was confirmed by x-ray of the chest.

The blood count at this time was 60% hemoglobin, 3,520,000 erythrocytes and 17,100 leukocytes with 69% neutrophils.

The course in the hospital was interesting in the gradual subsidence of a temperature ranging daily from 98.2 to 103.2 degrees F. down to a normal level for the last 9 days of a 19-day hospital stay. A bronchoscopy was done and the right lower lobe bronchus showed considerable oozing from a mass of granulation tissue which precluded a visualization of this bronchus. Considerable blood and pus were aspirated from the right lower lobe bronchus



and the bronchoscopist reached the conclusion of an abscess as the probable explanation of the picture. Another bronchoscopy was done and reported as showing the right upper and middle lobe bronchi to be clear. Study of the right lower main stem bronchus disclosed flat granulation tissue which bled easily. Re-ray suggested very little change during the period of hospitalization. The patient was dismissed with a tentative diagnosis of bronchiogenic carcinoma, but an early re-checking examination was requested.

He returned 2½ months later with the history of having gained steadily in general strength and weight (24 pounds). The cough had almost disappeared. A small amount of whitish mucus was expectorated daily. Examination of the chest showed a definite lag in the respiratory excursion at the right base, with slight impairment and a slight reduction in the vibratory phenomena and breath sounds at this base. The blood count showed 88% of hemoglobin, 4,300,000 erythrocytes, 14,500 leukocytes, of which 64% were neutrophils. Stereoscopic x-ray of the chest showed only a very slight density adjacent to the right heart border. The improvement over the previous film was marked. Examination of the sputum for tubercle bacilli was negative, and a guinea pig inoculation and gastric aspiration were negative for tuberculosis. The sedimentation rate of 6 millimeters in 60 minutes was noted. The impression of healed or dealing pulmonary abscess was made.

The patient returned to the hospital for the third time 22 months later. He stated that his condition had remained unchanged except for an occasional dull pain in the left lower chest, and 6 weeks previously a severe cough with the expectoration of an offensive white, frothy sputum had persisted for a week or 10 days. A tight, pressing feeling in the upper anterior chest occurred for a short time and then disappeared. The sputum became darker in color and amounted to about one-fourth cupful daily. Severe dyspnea had been noted at the outset of the relapsing symptoms. A weight loss of 25 pounds had occurred in the interval since the last admittance.

Of particular importance at this time were the evidences of atelectasis at the right base in the limitation of motion, dullness, decrease in vibratory phenomena and breath sounds. The diagnosis of bronchiogenic carcinoma was reaffirmed and sustained by x-ray, bronchoscopic examination and biopsy of the lesion that obstructed the right lower lobe to bronchoscopy. Squamous cell carcinoma of the right lower lobe bronchus was diagnosed. The patient died from a tear of the inferior vena cava

upon the attempt at surgical removal. The neoplasm had involved the diaphragm and the lung was frozen to the posterior mediastinum about the heart and great vessels. (Fig. 1.)

This patient gave a characteristic history of weakness, cough, weight loss, pain and fever. The advancing evidences of atelectasis of the right lower lobe led to the clinical diagnosis of bronchiogenic carcinoma. The x-ray confirmed the diagnosis of atelectasis without affording information as to its origin. The laboratory added the presence of a hypochromic anemia with a neutrophilic leukocytosis. Early bronchoscopic examinations gave no confirmation of the clinical diagnosis. Progress x-ray studies lent further confusion to the picture when they confirmed the physical evidences of a disappearance of the atelectasis of the right lower lobe. The recurrence of these changes to physical examination and x-ray led to a repetition of the bronchoscopic study and upon biopsy the confirmation of the original clinical diagnosis of bronchiogenic carcinoma. In the intervening 2 years the tumor had become inoperable. This experience is a further argument for exploratory thoracotomy.

The pleura may be the seat of a pyogenic process secondary to bronchiogenic carcinoma and the possible relationship may be overlooked.

*Case 5*—C. L. H., white male, 41 years old, entered with the complaint of swelling of the legs, which had developed in 3 weeks. A dull aching abdominal pain, dyspnea on exertion, an unproductive cough, pressure over the sternum, nausea and vomiting had further marked the course. Within 6 weeks time the patient had lost 40 pounds in weight. Seven years previously he suffered an attack of influenza.

To physical examination the essential physical findings were: Cyanosis, decreased respiratory excursion of the right side of the thorax, decreased tactile fremitus, dullness and absent breath sounds over the right thorax, heart displaced to the left, the liver palpable and tender 5 cms. below the costal margin. The temperature was 101 degrees F. A diagnosis of chronic empyema was made. A neutrophilic leukocytosis of 90% of 15,800 was established. Aspiration of the chest withdrew about 15 ccs. of thick greenish pus. Cultures of this fluid disclosed streptococci. X-ray of the chest showed a marked density occupying two-thirds of the right

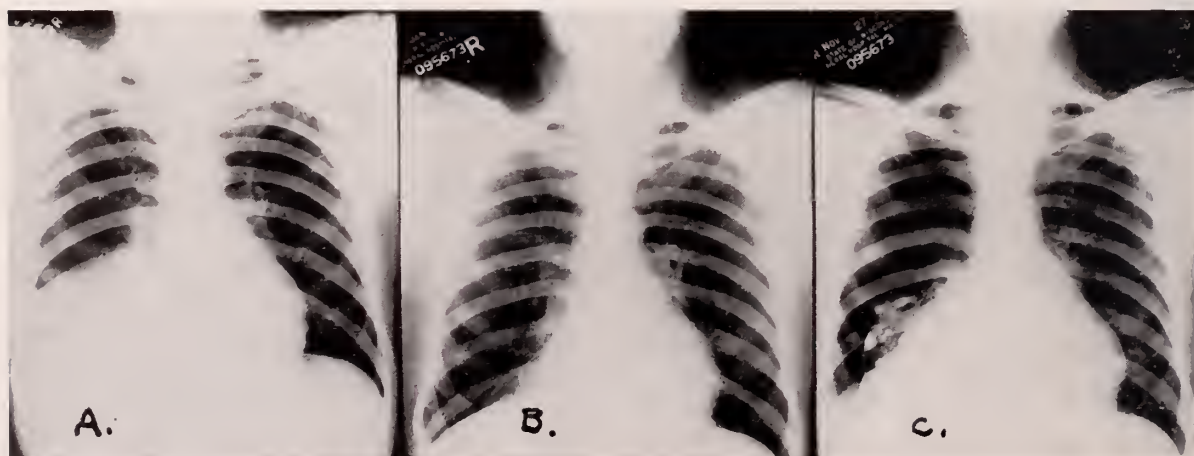


FIG. 1. Roentgenograms of Case 4: A, showing collapse of the right lower lobe; B, 1½ months later, demonstrating the partial clearing of the collapse; C, 22 months after B, with recurrence of the collapse (and a diagnosis pneumothorax).



side of the thorax, almost obscuring the ribs and completely obscuring the right border of the heart.

The surgical consultant advised open drainage and under nitrous oxide anesthesia a portion of the eighth rib was resected and about a quart of thick creamy pus was evacuated. Subsequent to the operative interference the patient improved somewhat, but the fever of a remittent order continued between 99 and 101.8 degrees F. Periods of sharp dyspnea and paroxysms of coughing were particularly troublesome. In spite of supportive care and local attention to the empyema cavity, the patient's condition became steadily worse and he died 10 weeks after admission.

At necropsy the right lung showed a peripheral collapse and there was an abscess cavity occupying its lateral portion. The hilum was almost entirely replaced by neoplastic tissue, which was medullary upon section and infiltrated the lung quite extensively. It apparently arose from the mucosa of the main bronchus. The main bronchus was entirely occluded. The neoplasm extended to involve the mediastinum and the diaphragm on this side. In the anterior aspect of the left upper lobe there was an induration overlying a cavity 5x3.5x1.5 cm. containing thick mucopurulent fluid. The indurated portion of this cavity showed an alveolar structure with some necrosis, hemorrhage and infection. The liver contained many nodules from 1 millimeter to 3 centimeters in diameter, light in color and fairly firm. Certain of these showed hemorrhage and central necrosis. Histologic section of the primary and secondary neoplasm showed a carcinoma with cells of the polymorphous type, resembling lymphosarcoma in certain places.

There was no suspicion of a neoplastic background in this patient. The absence of a history suggestive of a respiratory infection might have afforded some diagnostic clue. Such, for example, was the direction of differential approach in the following patient:

**Case 6**—E. B., white male, 57 years old, pain in the stomach of 3 months' duration. Foods other than soup apparently increased the pain. Incidentally, vertigo, palpitation and arrhythmia had led to bedfastness for 3 weeks before admittance. There was very little chest pain. A dry cough had persisted over a period of years and for 3 months there had been a small amount of whitish sputum. There was no hemoptysis. Weakness had advanced and a weight loss of 43 pounds had occurred in 6 months.

Upon physical examination dullness was demonstrated in the right base. No movement of the same could be demonstrated with change of position. The thorax showed only scattered fine, crackling rales in the right upper lung posteriorly and over the fourth interspace anteriorly. The spleen was just palpable and there was tenderness in the left lower quadrant.

The preliminary diagnosis was pleurisy with effusion at the right base, and its origin was thought to be either tuberculous or neoplastic reflecting metastases from a gastric carcinoma. A gastrointestinal x-ray series showed no abnormalities. Bronchoscopy gave no diagnostic information. X-ray of the chest showed elevation and immobilization of the right diaphragm, and a dense shadow obscured the right base. To fluoroscopy this density did not shift with change of position, and the shadow was localized anteriorly and extended obliquely upward in the region of the primary fissure. Lipiodol insufflation showed incomplete filling of the lower lobe trunks, and none of the lipiodol entered the basal clouding. On the basis of these findings an impression of an encapsulated effusion was made.

A persistent neutrophilic leukocytosis of 13,500 with 80% neutrophils to 32,100 with 91% neutrophils was recorded. The localization of the effusion led to repeated exploratory thoracenteses. On the second attempt 10 cc. of a thick, yellowish pus mixed with blood was aspirated from the right lower thorax. Three days later 25 cc. of similar fluid was withdrawn. Bacteriologic studies of the same showed streptococci. A subperiosteal resection of the right sixth rib was done, the pleura was incised, and a cavity of about 150 cc. entered. The patient continued to drain from this area; his temperature and leukocyte count dropped to normal. Twenty-two days after thoracotomy the cavity had entirely healed. Persistence of epigastric abdominal pain led to a repetition of the gastro-intestinal studies with negative results.

The progress was not satisfactory and a fever ranging to 100.2 degrees F. recurred. An increase in the signs of fluid and the x-ray density at the right base led to exploratory puncture, whereupon 5 cc. of thick, greenish-white pus was obtained. The old incision was reopened, and a 50-cc. cavity without gross pus was opened and packed. The patient continued to complain bitterly of epigastric pain, unrelated to meals and occasionally accompanied by vomiting. The clinical course was sharply downhill. There was some extension of the density at the right base suggestive of massive collapse upon x-ray study. Exaggerated breath sounds in the right axilla at one time suggested a bronchial fistula. Finally, a month after the second operation, the patient had profuse drainage of a greenish-brown, foul-smelling pus from his old empyema cavity. The leukocytosis, which had subsided to 11,250, rose to 21,300 with 90% neutrophils. Gross evidences of a broncho-pleural fistula persisted, and the patient died after a hospital stay of 4½ months.

Upon necropsy the right lung showed a direct connection of the fistulous tract from the empyema cavity to the main bronchus. The lower lobe contained a pale, opaque, neoplastic mass originating in the lower main bronchus. Extensive fibrosis and consolidation occupied the remainder of the lower lobe. In the upper lobe there was a cavity 5 cm. in diameter, irregular in shape and lined with inflammatory exudate. There was extensive consolidation in the remainder of the upper lobe. The left lung contained a grey-green, softened area 3 cm. in diameter. The softened area was sharply outlined by a hemorrhagic zone and a thin white line just inside the same. The remainder of the lung showed massive colorized thrombus. The artery leading to the softened area in the left lobe contained a laminated thrombus. A metastatic neoplastic process likewise involved the pericardium and right auricle. The histologic study of the neoplasm showed a transitional cell carcinoma in places, with prickle cell epithelioma in others.

In retrospect, the failure to establish a clear explanation for the empyema and its recurrence after adequate drainage might well have excited the suspicion of a neoplastic background. The usual methods of precision, x-ray, bronchoscopy and lipiodol insufflation, however, afforded no support for this diagnosis. This circumstance lends weight to the position that bronchiogenic carcinoma must always be kept in mind in the presence of an unexplained lung abscess or empyema.

Naturally, bronchiectasis takes its place among the masquerades of bronchiogenic carcinoma.

**Case 7**—J. S., colored male, 53 years old, was admitted with the chief complaint of a cough which had continued over 2 years. The sputum was clear mucous to greenish-yellow in type. Occasionally



blood tinging of sputum was noted in the early morning. Periodic pains occurred in the chest. Two or three times a month night sweats were noted. A week before admittance chills lasting 30 to 35 minutes had occurred. General malaise and weakness, with a weight loss of 20 pounds in a year and a half, completed the subjective history.

The chest showed an increase in the supraclavicular fossae, right greater than the left, limitation of motion on the right side of the chest, pulsations in the second interspaces bilaterally, impairment to dullness throughout the right chest, bronchial breath sounds and increase in vibratory phenomena on the right, coarse moist rales in both lung fields. The diagnosis of chronic bronchitis and bronchial asthma was made, and bronchiectasis and pulmonary tuberculosis were considered as possible complicating conditions.

Laboratory studies disclosed 23,600 leukocytes with 94% neutrophils on admittance. Sputum examinations were repeatedly negative for tubercle bacilli, but there were found streptococci and gram positive pleomorphic bacilli. X-ray of the chest showed displacement of the heart to the right, and there was an irregular and quite dense opacity which largely obscured the lower half of the right lung field. It was more dense medially and faded out gradually toward the periphery. Throughout this zone of density appeared an irregular rarefaction. An x-ray diagnosis of atelectasis of the right lower lobe with multilobular abscess formation was made. A bronchoscopic examination was done, and pus was withdrawn from the right main branches, but no obstructive lesion was seen. Lipiodol insufflation was attempted, but it was unsuccessful. The temperature ranged from 95 to 103.2 degrees F. The first stage of a drainage of the lung abscess was done with resection of ribs and packing with gauze. The condition following this process was fairly satisfactory, although dyspnea continued and it was necessary to support the patient with oxygen. Seventeen days later a second stage of the drainage was carried out. An incision was made through the area of adhesions and the lung was opened with the cautery. Much thick, yellow pus was encountered. The patient did fairly well for a few days, and then dyspnea, weakness and prostration preceded death 2 weeks later.

At necropsy a bronchiogenic carcinoma 2.5 cm. in diameter was found almost completely occluding the right main bronchus in an irregular cauliflower-like growth. The tumor was white in color, firm in consistency and practically overlaid the lumen of the secondary bronchus to the lower lobe. The upper right lobe was mottled dark green and grey, and contained little air. The posterior portion of the lower lobe was dark red, and contained many cystic cavities with necrotic walls filled with red cloudy fluid. The anterior portion of the lower lobe was greenish-white in color, and contained many small cavities with indurated walls filled with thick purulent-appearing material. Throughout the parenchyma were many irregular nodules up to 3 cm. in diameter. Through the left lung were many firm nodules grey to white in color, giving the surface a granular appearance. The bronchiogenic neoplasm proved to be prickle-cell in type. There was, in addition, an extensive tuberculous process. The lung abscesses were tuberculous, and there were miliary tubercles in the bronchial nodes and spleen.

In retrospect, this patient can scarcely be considered to represent an uncomplicated problem in diagnosis. The clinical diagnosis was changed from chronic bronchitis and bronchial asthma with bronchiectasis and pulmonary tuberculosis as alternative considerations to pulmonary abscess in

the atelectatic right lower lobe. In the light of the necropsy findings it is difficult to explain the negative sputa (for tubercle bacilli) and the failure of bronchoscopy to establish the existence of the bronchiogenic carcinoma. Of course, the abscess of the lung evacuated by surgery was secondary to the neoplasm.

Occasionally bronchiogenic carcinoma may occur in the guise of bronchial asthma.

*Case 8*—G. R., white male, 55 years old, was admitted to the hospital for a study of bronchial asthma. He dated his shortness of breath to an exposure to dust in threshing 5 months previously. Marked wheezing attended this shortness of breath, which was increased upon exertion, such as walking against the wind or in cold weather. Cramp-like pains in the right and left chest upon exertion occurred, and there was unusual fatigue for 8 months. The cough was productive of very little sputum. Upon one occasion a slight epistaxis followed a severe bout of coughing.

The occupational history was interesting in the fact that 40 years ago the patient worked in an open limestone quarry, breaking stones with a hammer. He continued this occupation for 1 year, and then after an interval of 4 years returned to run a steam engine in a limestone crusher. This occupation was dusty, but never included stones other than limestone, and he continued at the occupation for 6 years. From that time he had been a farmer.

The important physical findings related to the nodular enlargement of the thyroid, posterior cervical lymph nodes on the left, enlarged and firmly nodular, emphysematous contour of the chest, dyspnea at rest, retracted costal margins at top of inspiration, suppressed breath sounds in the right upper lobe particularly anteriorly, with coarse inspiratory and expiratory rales scattered through both lung fields and fine crackling rales at both bases.

A diagnosis of carcinoma of the right upper lobe bronchus was made. X-ray of the chest showed a fan-shaped area of increased density extending outward and upward from the right hilum and limited below by the secondary interlobar fissure on a plane with the third rib anteriorly. This density was more marked medially, where it merged with the hilum shadow. Dr. L. W. Paul confirmed the clinical impression of bronchial carcinoma with partial atelectasis of the right upper lobe. The cervical lymph node was removed for biopsy, and upon section proved to represent a tuberculous lymphadenitis.

In spite of this finding the clinical opinion of a bronchiogenic carcinoma prevailed, and the patient was recalled for further study. Bronchoscopic examination on this occasion was impossible by reason of the patient's lack of cooperation. The Mantoux test was negative. The pulmonary signs changed perceptibly, and an inspiratory stridor had developed in the second right interspace on the second admittance (9 days after the first discharge). There was reduction to complete suppression of the breath sounds and voice sounds in the right upper lobe. Progress x-ray films at 12 and 22 days showed some accentuation of the basal trunk markings on the right without alteration in the upper lobe density. Repeated sputum examinations for tubercle bacilli were negative. Lipiodol insufflation of the right bronchus indicated a partial to almost complete obstruction of the right upper lobe bronchus close to its origin. After a preliminary graduated pneumothorax an exploration of the thoracic cavity was done, and carcinomatous nodules were found throughout the right lung and mediastinum. The right pulmonary artery was ligated, but the neoplasm was deemed in-



operable. The clinical picture, the postoperative course and the chest findings indicated a terminal broncho-pneumonia.

Although bronchial asthma was the working diagnosis in this patient, the true state of affairs was soon discerned in the localized suppression of breath sounds in the right upper lobe. Later there was added an inspiratory stridor in the second right interspace. An interesting misleading detail arose in the biopsy return of a tuberculous lymphadenitis in the cervical nodes.

The present symptoms of bronchiogenic carcinoma may be remote from the lung. The occasional misguiding occurrence of a marked cervical lymphadenopathy is illustrated by the following patient:

*Case 9*—D. R. C., white male 55 years old, first noted pressure as though the eyes were going to pop out when he leaned over 3 weeks before admittance. At about the same time he also noted the soreness of his neck. A week later he first noticed a nodular enlargement in his neck and axilla. An x-ray was taken by his home physician and established some change in the chest. Recent anorexia, nervousness and apprehension were remarked. About a month previous to his present illness, he had noted some breathlessness and a sense of suffocation at night. Ecchymoses were observed on the anterior thoracic wall about 2 weeks before admittance.

The pertinent physical findings were: Palpable nodes in the left cervical region, and axillae, cyanosis of the base of the neck, dilated veins over the thorax, dullness at the right apex below the clavicle close to the midline, diminished voice and breath sounds over the right apex posteriorly, palpable liver and spleen. The working diagnosis was Hodgkin's disease or lymphosarcoma. A biopsy of one of the axillary lymph nodes was diagnosed as lymphadenitis. The presence of pleural fluid led to an aspiration which was not diagnostic. X-ray of the chest showed a normal left lung field. The right upper lobe was contracted and showed a zone of density close to the lung root and mediastinum. The right diaphragm was quite high. The roentgenologic appearance suggested a neoplasm of the right upper lobe bronchus with partial collapse and neoplastic infiltration into this lobe. The high right diaphragm suggested phrenic involvement on this side. 1500 r units of deep x-ray were given in eight divided doses. The temperature was only very slightly elevated, from 99 to 99.6 degrees F., on two occasions. He died on the twenty-fourth day.

At necropsy the primary neoplasm was found to arise from the right upper lobe bronchus and to extend diffusely into the parenchyma leading to a marked atelectasis. This neoplasm had likewise extended into the hilum, with some pressure on the superior vena cava particularly. The left lung was normal except for the presence of muco-hemorrhagic material in the main bronchi and a partial atelectasis in the posterior portion of the lung. To histologic section the carcinoma apparently rose from the small bronchioles and tended to become scirrhous. There were areas of infarction and necrosis in the tumor tissue. These changes, together with a marked fibrosis, suggested the results of irradiation.

This patient presented an extremely short course. Fortunately, the laity as well as the profession is biopsy conscious, and advantage should be taken of this diagnostic aid upon the slightest suspicion. In this instance the selected node was apparently

not diagnostic. The clinician must select the site for biopsy with utmost care. The x-ray examination concluded the diagnosis of bronchiogenic carcinoma which was confirmed at necropsy.

One of the most dramatic of these masquerades is cerebral tumor.

*Case 10*—M. K., white female, 61 years old (history obtained from husband). The patient had enjoyed good health until a year previously, when one side became rigid and paralyzed. It remained unchanged for the intervening period. Several months later the opposite side became rigid and the patient became bedfast. Weakness in the opposite arm four weeks before admittance made it impossible for the patient to help herself. Complete mental detachment with periods of unresponsiveness was observed.

The physical examination revealed a vacuous and immobile facies, generalized spasticity more marked on the left than the right, and all extremities somewhat flexed. The right arm alone could be partially extended. Slight strabismus on the left and ironing out of the right side of the face with slight ptosis of the right upper lid were noted. There was a high degree of choking of the optic discs. No abnormalities were established to physical examination of the chest. Neuro-muscular examination was unsatisfactory because of the spasticity and contractures in the right leg. The right biceps and triceps reflexes were extremely hyperactive. The Babinski responses were bilaterally positive, as were also the confirmatories.

Upon laboratory examination a slight hypochromic anemia was established. The blood Wassermann reaction was negative. A lumbar puncture was performed and the initial pressure was 350 mm. of water. After removal of approximately 12 cc. of spinal fluid, the pressure fell to 90 mm. of water. The spinal fluid Wassermann reaction was negative, globulin faintly positive, gold sol 1233310000, cells 1, proteins 49 mgms. per cent, sugar 79 mgms. per cent (corresponding blood sugar 101 mgms. per cent). Stereoscopic films of the skull were unsatisfactory because of poor cooperation.

The temperature rose steadily during her hospital stay and on the eighth day reached 102.8 degrees F. The presence of abundant rales with an elevated respiratory rate of 40 and pulse rate of 164 led to the diagnosis of broncho-pneumonia. The clinical impression of a deep-seated cerebral neoplasm, starting in the left hemisphere and involving the basal ganglia and opposite hemisphere, was reached.

Upon necropsy the brain tumor, 5x5x4 cms., was localized in the right occipital lobe. The terminal broncho-pneumonia was confirmed and an area 3 cms. in diameter at the lower tip of the upper lobe which was thought to represent an organizing pneumonia, was removed for histologic section. The brain tumor, as well as the pulmonary nodule, proved to be adenocarcinoma of bronchial origin. The primary tumor was overlooked at necropsy, but in addition to these metastatic lesions in the lung and brain, there were further histologic evidences of metastatic adenocarcinoma in the pleura, pericardium, tracheo-bronchial lymph nodes and retro-aortic tissue.

In this instance the cerebral picture dominated the clinical course. The lungs were apparently unsuspected. The primary diagnosis of a cerebral neoplasm was presumably confirmed upon necropsy. Only upon histological study was the true state of affairs established as a bronchiogenic carcinoma with metastases to the brain. This circumstance probably constitutes the most interesting of the varied manifestations of this amazing tumor.

A slight variation of the same story is illustrated by this patient:

*Case 11*—C. H., white female, 43 years old, complained of severe headaches of 2 months duration. A month before admittance there was a period of emesis without reference to the ingestion of food or other circumstances. This lasted for 2 weeks. For 3 weeks before entrance she held her head to one side and complained of "sore glands" in the neck. Two episodes of vertigo in the past year have led to falling. The attacks were so severe as to incapacitate the patient for the past 2 months. Memory for recent events failed and the patient expressed a sense of nervousness. Failing vision and diplopia were marked for the past several months. The inventory by systems disclosed the occurrence of a chronic cough with considerable expectoration for the past year. Hemoptysis of considerable severity occurred through this period. Recurrent chills, fever and sharp pains in the chest were noted for 3 months. In the past medical history the only circumstance of importance was the occurrence of influenza 14 years ago.

The physical examination of the house staff and visiting physicians directed particular attention to the mental status of the patient and to the evidence of a neurologic lesion, in the choking of the discs, hemorrhages and exudates, tilting of the head to the right, dysmetria on the right and exaggerated knee jerks on the right. The tentative diagnosis of hypernephroma with possible metastases to the lungs and brain was made with an alternative diagnosis of brain tumor. X-ray of the thorax disclosed a dense shadow extending upward and outward from the left upper hilum well out into the lung field. The lower border of this density was rounded and quite sharply demarcated, while superiorly the density faded out gradually into the parenchyma and was limited by an oblique upper margin. Dr. L. W. Paul suggested the diagnosis of a bronchiogenic carcinoma.

A re-check of the physical findings established the existence of dullness in the left upper chest, with some increase in the breath and voice sounds over this area. The temperature was only occasionally elevated above normal, the highest level being 100.4 degrees F. The patient died after a hospital stay of 43 days.

At necropsy a portion of the left upper lobe was atelectatic and nodular in appearance. On section there were numerous areas of a greyish cellular-appearing tissue infiltrating the hilum structures and the lung adjacent thereto. The lymph nodes were firm and nodular, and upon section appeared grey and medullary with some black anthracotic pigment. At no point was there an apparent break in the continuity in the lining of the bronchi, although they contained a moderate amount of blood tinged sticky mucus. The right adrenal contained a tumor nodule. The brain showed three yellowish gelatinous areas in the left hemisphere, one of which was in the tip of the frontal lobe, another in the midparietal region, and a third at the anterior tip of the temporal lobe. Section of these areas disclosed a cavity in the parietal lobe measuring 3x5x2 cms., apparently resulting from the degeneration of a tumor nodule. The right lobe of the cerebellum was the site of a similar process. On histologic section of this tumor of the lung and the several metastases, a diagnosis of primary bronchiogenic carcinoma of the mucous gland type was made. Occasional cells were observed to possess cilia.

Obviously the error in this instance related to the definition of the primary site of the neoplasm. The cough and hemoptysis were incorrectly explained upon the basis of a metastatic rather than

a primary lesion. The x-ray appearance favored bronchiogenic carcinoma. Of especial interest was the extent of the cerebral and cerebellar metastases.

### DIAGNOSIS

Many further diagnostic problems present themselves from time to time. Probably the most involved among these relate to the concurrence of bronchiogenic neoplasm with totally unrelated conditions, such as toxic adenoma of the thyroid gland, bleeding duodenal ulcer, missed abortion and rheumatic heart disease (with pulmonary infarction). Of course, these disorders may dominate the clinical picture or there may be a combined responsibility for the disability. At times the existence of a bronchiogenic carcinoma may be unsuspected until the histological demonstration of the lesion.

Actually in a series of 55 patients with bronchiogenic carcinoma in the Wisconsin General Hospital the correct clinical diagnosis was made in 38 (69%). A carefully evaluated history has an important place in this relation. The leading symptoms occurred in the following frequency:

	Number	Per Cent
Fever .....	44	80
Cough .....	35	63.6
Pain .....	29	52.7
Dyspnea .....	26	47.2
Weight loss .....	25	45.4
Weakness .....	13	23.6
Hemoptysis .....	12	21.8

Chills, dysphagia and dysphonia were unusual symptoms.

The physical signs varied greatly, as might be anticipated from the range of localization and the tissues predominantly affected. Roughly, the changes may be ascribed to a pleural or a bronchial predominance. Signs of pleural fluid were elicited in 20 patients (36.3%). Dullness not arising from effusion was present in 10 instances (18.1%). The vibratory phenomena and breath sounds were increased in only 3 patients (5.4%), whereas these signs were decreased or absent in 11 patients (20%), without other evidences of effusion. Atelectasis undoubtedly explained these signs. In our experience particular importance attaches to the localized suppression of breath sounds, especially when the history points toward a bronchiogenic neoplasm. A localized inspiratory stridor may be an occasional helpful sign. A careful investigation for lymphadenopathy should be a routine procedure. Twenty patients of this group (36.3%) showed enlargement of the cervical and axillary nodes (25.4% and 10.9%, respectively). The small supraclavicular nodes and the axillary nodes along the pectoral fold seemed particularly involved.

The supporting measures of precision are very important elements in the diagnosis of bronchiogenic carcinoma. The roentgenologic studies are especially helpful. Pleural accumulations may mask the underlying pulmonary or bronchial lesion. A wedge-shaped density, with its base upon the hilum and its apex outward, characterizes a majority of these tumors. The demarcation from the



normal lung may be sharp or indefinite. The neoplasm may be centrally or peripherally placed. Almost as important, but only inferentially diagnostic, are the evidences of bronchial obstruction which range from overaeration in partial to gross radiopacity in complete occlusion. The several inflammatory and destructive lesions of the lung and pleura have no radiologic details peculiar to their neoplastic origin. Lipiodol insufflation gives important localization of bronchial obstruction. In 28 patients (50.9%) the x-ray was a material contribution to the diagnosis. In only 3 established bronchiogenic carcinomata (5.4%) were x-ray studies negative in the face of positive clinical evidence.

The biopsy of metastatic nodes was diagnostic in 11 patients (20%). In 4 (7.2%) the material obtained by biopsy was not diagnostic. Bronchoscopy was diagnostic in 10 instances (18.1%). In 7 other patients (12.7%) with a positive clinical diagnosis of bronchiogenic carcinoma the bronchoscopic examination was negative. In 2 more (3.6%) proved tumors of this group, both clinical and bronchoscopic studies were negative. In a like number oesophagoscopy fixed the diagnosis by biopsy. The thoracoscope undoubtedly will play a material part in the diagnosis of the future. Studies of sediment in pleural fluids for tumor cells have proved unreliable in the main. Occasionally neoplastic cells may be encountered in pleural fluid and in the sputum.

The age and sex distribution of this series conforms fairly well to other analyses.

	Male	Female
17 .....	1	0
21 - 30 .....	0	0
31 - 40 .....	3	2
41 - 50 .....	6	6
51 - 60 .....	20	2
61 on .....	10 (oldest 72)	5 (oldest 86)
	40	15

Obviously, bronchiogenic carcinoma occurs preponderantly after the fourth decade of life (89%) in the male sex (72.7%, or 2.6 males to 1 female). The wide spread of occupations among this group will not admit of any generalization.

The necropsy studies of 29 of these patients are particularly instructive. In 24 subjects (43.6% of the total group) the post mortem examination confirmed the clinical diagnosis. In 5 others (9% of the total group) the diagnosis of bronchiogenic carcinoma was first made at necropsy. Interestingly, recourse to the histologic study revised the gross diagnosis in 9 instances, a startling figure. The anatomic diagnoses had been organizing pneumonia (1), pulmonary fibrosis (2), bronchiectasis (1), miliary tuberculosis (2), and broncho-pneumonia (4). (One subject is duplicated in the double diagnosis of miliary tuberculosis and broncho-pneumonia.) While the studies for metastases in this group were not exhaustive, the predilections for lymph nodes, lung, pleura, liver, kidney, adrenal, brain and bone should be stressed. No instance of

bone involvement suggesting hyperparathyroidism has been encountered.

#### COMMENT

From this brief survey of the experience with bronchiogenic carcinoma in the Wisconsin General Hospital several observations seem justified:

1. Bronchiogenic carcinoma may assume many clinical masquerades. Important among these guises should be remembered pulmonary tuberculosis, tuberculous pleural effusion, pulmonary abscess, bronchiectasis, empyema, bronchial asthma, Hodgkin's disease, lymphosarcoma, hypernephroma and brain tumor.

2. Unexplained pleural or pulmonary suppuration should lead to the suspicion of bronchiogenic carcinoma.

3. Among the symptoms of this neoplasm, fever, cough, pain, dyspnea, weight loss, weakness and hemoptysis are most important. The occurrence of fever in the presence of pulmonary symptoms and signs should lead to the consideration of bronchiogenic carcinoma rather than its exclusion.

4. The wide variation in the physical signs arises from the site of the predominant lesion. If bronchial obstruction be imminent or complete, suppression of the breath sounds with or without inspiratory stridor may be an important guide post to the diagnosis.

5. Roentgenologic aids have been more helpful than bronchoscopy in this series of patients.

6. Biopsy of the primary lesion upon bronchoscopy or of accessible lymph nodes offers the most direct means of diagnosis.

7. The anatomical diagnosis of bronchiogenic carcinoma is not always simple at necropsy, and histological survey must be the final check in all suspects.

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... I was much amazed to find on the title page of Chapman's journal (*Philadelphia Journal of the Medical and Physical Sciences*) for a period of years the following quotation from the *Edinburgh Review*: "In the four quarters of the globe, who reads an American book? or goes to an American play? or looks at an American picture or statue? What does the world yet owe to American physicians or surgeons?" Evidently the condescension of foreigners that so irked James Russell Lowell was not limited to literature. If the "Scotch Reviewers" who uttered the bitter criticism were to come back today, how amazed he would be at America's position in the world.

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## Spirochetal Bronchitis

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SINCE Castellani (1905) first reported that spirochetes were the etiologic agents in certain forms of broncho-pulmonary pathology, numerous authors have reported on this association in all parts of the world. However, few have reported in the United States, although it is believed that more cases are being recognized in recent years.<sup>1</sup> Because spirochetal bronchitis is unusual, even physicians who specialize in broncho-pulmonary disease fail to diagnose it.

### CASE REPORTS

*Case I.*—J. E., a white male aged 22 years, has a productive cough. This has been present since a post-operative broncho-pneumonia which occurred when he was 13 months old. There have been severe exacerbations about twice a year. At these times the cough increased in severity and productivity, the patient has a high fever, and he is confined to bed for a period ranging from two weeks to two months. On three occasions the condition progressed to a broncho-pneumonia, and J. E. has had a lobar pneumonia twice. In addition to bed rest, his treatment has consisted of inhalants and expectorants which produce some symptomatic benefit.

The cough is most severe in the morning, and deep breathing will initiate a coughing spell. The sputum is copious, thick and creamy-white, with a vile, nauseating odor and taste. Occasionally it is tinged or streaked with blood. J. E. regularly has an afternoon fever up to 100 degrees F., followed by sweats during the night. There are occasional sharp pains in the left side of the back that occur with cough paroxysms. Vomiting sometimes occurs after coughing, and is produced as much by the nauseating odor and taste of the sputum as by the severity of the coughing. The patient's appetite is always good, and his weight is usually about 160 pounds. During the past 8 months he has gained to his present weight of 190 pounds.

J. E.'s past illnesses include measles, mumps, influenza and whooping cough before he was 6 years old, and malaria at 15 years of age. A right inguinal hernia was repaired when he was 13 months old. The post-anesthetic pneumonia resulted in the initiation of his present illness. Tonsilectomy was done at 5 years and appendectomy at 8 years.

The patient was born in Pine Bluff, Ark. Because of his cough, he came to Arizona 4 years ago with considerable benefit. He is 22, and has been married 1 year. His wife is in excellent health and is pregnant. J. E. is employed as a salesman, since dust, fumes and exertion increase his coughing. He smokes about 10 cigarettes daily, uses no stimulants, and has never had any venereal disease.

The patient's father is in good health. His

mother has bronchial asthma. His only sister, 2 years his junior, developed pleurisy and tuberculosis a short time after J. E. had left the family in Arkansas. She is now an arrested case.

On casual inspection, J. E. appears to be a well-developed, well-nourished young man in good health. I was much surprised to find that his temperature was 101.2 degrees. The general physical examination was essentially negative except for many carious teeth and a few scattered rales over the lung bases posteriorly. On other occasions the rales varied from inaudibility to loud rhonchi which could be heard several feet distant.

Laboratory examinations showed his hemoglobin to be 85%, RBCs 4,600,000, WBCs 8,000, with 65% polys and 35% lymphs. Sedimentation rate was 35 mm., Kahn negative, undulant fever negative, Mantoux negative, urine negative. Sputum showed no acidfast organisms, but many spirochetes were seen when it was stained by Gram's method. Fusiform bacilli were not found.

X-ray showed an increase in shadow about the lung hili with some increased density extending to both bases. Lipiodol instilled into the bronchial tree showed no evidence of bronchiectasis or cavitation. Incidentally, the oil did not benefit the cough.

Diagnosis of spirochetal bronchitis was made and the patient was given weekly injections of Mapharsen. There was an immediate decrease in the amount of sputum and cough with a return to normal temperature.

*Case II.*—E. F., born July 28, 1938, was the larger of identical male twins, both entirely normal. March 16, 1940, E. F. appeared to have a cold with a mild bronchial cough, upon my examination. After the child seemed well, his cough continued. He developed attacks of asthma which became increasingly severe. Cutaneous sensitivity tests on May 3 revealed marked sensitivity to rye, tobacco and pyrethrum. Removal of the allergens led to some improvement in the child.

A second physician diagnosed the child's condition, on May 20, as whooping cough. However, E. F. had been given Sauer's vaccine 6 months previously, and his grandmother affirms he has never "whooped." On June 6 the same physician attended the child, ill with pneumonia. A roentgenogram on June 10 showed complete consolidation of the entire left lung. After successful therapy with sulfapyridine, there was a recurrence of symptoms and fever on June 20. Again, good results followed use of sulfapyridine.

Thereafter the writer examined the child about three times a week. His chronic cough seemed to be explained by the partial resolution of the consolidation. July 27 the cough was noticeably more

<sup>1</sup>Read before Cochise County (Arizona) Medical Society, May, 1940.



productive and fever recurred. Because of the foul odor and character of the sputum a lung abscess was suspected. A roentgenogram on July 20 showed consolidation of the left lower lobe, but no findings suggestive of a lung abscess. In a sputum specimen on August 2, many spirochetes were found, but no fusiform bacilli or pneumococci were present. The Kahn test was negative.

Intramuscular bismuth therapy, started on August 3, brought prompt remission of fever and decrease in cough. By August 12 the auscultatory signs of pulmonic pathology were negligible.

### DISCUSSION

Spirochetal bronchitis occurs predominately in adult males. Spano<sup>2</sup> states that 90% of infections occur in adults and 70% are males. Fici<sup>3</sup> claims that the disease does not affect children and that none of the statistics he has seen show a morbidity below the age of 20. However, Spano's case was a boy aged 12. Fernandez and Carri<sup>4</sup> had a case the same age. Schwarz<sup>5</sup> reports on a girl whose illness began at the age of 9.

This disease is usually chronic. The case reported above has been ill for 21 years. Castellani is said to have had a case of 6 years' duration, Najib Farah one of 8 years,<sup>7</sup> and Schwarz a case ill for 9 years.<sup>5</sup>

Cecil<sup>1</sup> states that loss of weight and strength is common. Yet in my case there was an actual weight gain coincident with chronic cough and fever. Many authors remark upon the lack of weight loss and the "normal" appearance of their patients.<sup>3, 5, 6</sup> Cachexia would seem to indicate a complication of the simple form of bronchitis.

Spirochetal bronchitis has generally been considered a highly communicable disease.<sup>1, 4</sup> This belief is seriously questioned by Schwarz<sup>5</sup> and Fici,<sup>3</sup> who, in 16 and 40 cases, respectively, have never found a familial or neighborhood contagion. With J. E. there has been no indication of infectiousness to his wife. If, as is generally accepted, the spirochetes reach the bronchi by aspiration, it should not be as communicable as a disease spread aerogenously.

There is no clear definition of the infecting organism or organisms. "The spirochetes," according to Cecil,<sup>1</sup> "doubtless come from mouth infection, caries and pyorrhea." Besides the Vincent's organisms, there are several species of mouth spirochetes which are considered as non-pathogenic. These include: *Borrelia bucale*, Cohn; *Treponema dentium*, Koch; *Treponema macrodentium*, microdentium and mucosum; and *Borrelia refringens*.<sup>7</sup> It is not beyond the realm of possibility that one or more of these mouth organisms may be able to produce pathology in the bronchus. Spano<sup>2</sup> states that Castellani's spirochetes are confined to tropical countries, while in cooler latitudes the disease is produced by Vincent's fusospirochetes. " \* \* \* the presence of fusiform bacilli with spirochetes definitely eliminates any confusion with analogous pulmonary conditions due to Castellani's spiro-

chetes and syphilis." Schwarz<sup>5</sup> has shown that the Castellani spirochetes display a polymorphism which is considered characteristic. He postulates that they may be identical with the fusospirochetes of Vincent since they can provoke identical lesions and symptoms.

Spirochetal bronchitis is diagnosed by finding organisms in the sputum.<sup>1, 3, 5</sup> The spirochetes cannot be seen in the usual smear stained for acid-fast organisms. Haire<sup>9</sup> attributes 88 or 388 cases of bronchitis, with sore throat and coryza, to a spirochetal infection. His diagnoses are made by finding "even an occasional spirochete" in a sputum test or throat smears. Tye<sup>10</sup> cautions that sputum may be contaminated in the mouth, "which is the normal habitat of spirochetal organisms." Todd and Sanford<sup>11</sup> attach no significance to isolated spirochetes because of their prevalence in the mouth. It seems, therefore, that Haire's 88 cases cannot be classified as true bronchial spirochetes.

Most authorities agree that spirochetal organisms may invade the bronchi by direct extension from infected foci in the mouth and throat, or by aspiration as during anesthesia. Once in the bronchi, spirochetes may initiate abscess, gangrene, bronchiectasis and pneumonia, which may be terminal. J. E. has had pneumonia five times, but there is no evidence of bronchiectasis. Spirochetes may also complicate carcinoma of the lungs.<sup>12</sup>

### CONCLUSION

Spirochetal bronchitis is characterized by a chronic cough, copious foul sputum, and fever, with relatively little local destruction or general physical impairment. The disease is not very infectious. Because the organisms probably are derived from the mouth, oral hygiene before anesthesia is an important prophylactic measure. A search for spirochetes should be made in every patient with obscure bronchopulmonary disease.

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## Infant Feeding

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**N**UTRITIONAL knowledge has increased rapidly in the present century, resulting in many changes in our methods of feeding infants. Except for breast feeding, infant feeding had its beginning wholly on an empirical basis. Foods other than human milk or suitably modified cow's or goat's milk have been added to the infant's diet closer and closer to the time of birth in order to meet known nutritional needs. Orange juice and cod liver oil, or their equivalents, are now given shortly after birth. Egg yolk, vegetables, fruits and cereals are now fed after the first few months of life.

From field work in the State of New Mexico, it is apparent that human milk is the best safeguard for the infant. If human milk is not available, modified evaporated milk is most frequently the best substitute. Evaporated milk has had more than half of its water removed, and a one to one dilution results in a mixture of greater concentration than the original milk. Dilution to the original volume means a dilution of 1:1.2 instead of 1:1. In early infancy the milk needs to have considerable amounts of water added, and in later infancy the amount of water to be added should be gradually reduced.

The following schedule is suggested for the modification of evaporated milk for well infants:

**Birth—until over eight pounds weight—**

One part evaporated milk to three parts of water; one teaspoonful of Karo syrup to every three ounces of mixture. Seven or eight feedings daily of three to four ounces per feeding.

**Eight pounds until over ten pounds weight—**

One part evaporated milk to two parts of water; one teaspoonful of Karo syrup to every three ounces of mixture. Six feedings daily of four to five ounces per feeding.

**Ten pounds until over fourteen pounds weight—**

One part evaporated milk to two parts of water; one teaspoon of Karo to every three ounces of mixture. Five feedings of five to six ounces per feeding.

**Fourteen pounds and later—**

One part of evaporated milk to one and one-half parts of water; one teaspoon of Karo to every three or four ounces of mixture. Five feedings of five to six ounces per feeding.

The Karo syrup can be gradually decreased and finally discontinued by the time the infant is eight to ten months of age.

### VITAMIN REQUIREMENTS

Orange juice, or its equivalent, should be added to the artificially fed infant's diet very soon after

birth to supply vitamin C. The infant has some storage of vitamin C, but this storage should not be depleted. Ten to thirty milligrams of ascorbic acid are considered to be the infant's requirement from birth to nine months of age. This amount is supplied by one to two ounces of orange juice, or two to four ounces of tomato juice. The infant fed human milk does not need added vitamin C as early as the artificially fed infant, provided the mother's diet has a liberal supply of vitamin C.

Cod liver oil, or its equivalent, should be added to the artificially fed infant's diet soon after birth. The vitamin D requirement of the full-term, artificially fed baby in Iowa, has been found to be between three hundred and four hundred units a day. The requirement of breast-fed infants for vitamin D is, in general, less than that of babies fed cow's milk, but how much less is not known. However, vitamin D is necessary for many and useful for most breast-fed infants. It has been observed that infants given irradiated evaporated milk containing one hundred and thirty-five units of vitamin D to the reconstituted quart tend to grow at average rates, whereas infants given from three to four hundred units of vitamin D tend to grow somewhat faster than the average. However, infants given eighteen hundred or more units of vitamin D daily grow at rates similar to or less than those of infants given one hundred and thirty-five units daily. The above values are based on the work of Jeans and Stearns<sup>1</sup>.

The U.S.P. standard requires that cod liver oil contain at least three hundred and six units of vitamin D to the theoretical 4 c.c. teaspoonful. One teaspoonful of cod liver oil frequently contains as many as nine hundred units of vitamin D. The daily requirement for a normal infant would, therefore, not exceed one teaspoonful of cod liver oil. Vitamin D is not as well utilized on a unit for unit basis from the more concentrated preparations as from preparations in which it is more widely dispersed, such as cod liver oil. In an area such as the Southwest where sunshine is more abundant than in Iowa, the daily requirement, if different, would certainly be less. Vitamin D does not decrease the minimum requirement of milk.

The young baby who is receiving an adequate amount of suitably modified milk, vitamin C and vitamin D from natural food sources, has a large portion of his nutritional needs satisfied. Only two of the known essential food components are in question as to adequacy. One of these is iron, and the other is vitamin B.

At birth the baby has a large store of iron in blood hemoglobin. In addition to the large store of iron in the blood at birth, some iron is stored in the liver of the newborn infant. The smallest

From Department of Pediatrics, College of Medicine, State University of Iowa.

Read before New Mexico Medical Society, Albuquerque, May 27-29, 1940.



values for liver storage have been observed in infants born of anemic mothers. For about two months after birth the iron content of the blood hemoglobin decreases. This makes available a considerable amount of iron for storage. A considerable amount of this iron would, therefore, be of little value as long as the hemoglobin breakdown is taking place. With the above-described diet of milk, orange juice and cod liver oil, the infant is using up his stores after blood destruction has ceased, and until sufficient iron is ingested. One frequently sees infants with profound secondary anemia as a result of the delayed offering of iron-containing foods. The administration of iron-containing foods at an early age seems appropriate. Secondary anemia from the above-described cause was frequently found in infants from six to eight months of age in the State of New Mexico. The development of anemia during the last six months of infancy is almost inevitable unless iron-containing foods are given. Infection or illness causes loss of iron from the body; so the need is greater if the child is ill.

From retention studies, the iron requirement of artificially fed infants over three months of age has been placed at about five milligrams per day. This can be most easily supplied by giving one teaspoonful of a 1 per cent solution of ferric ammonium citrate each day from three to six months, two teaspoonfuls for the baby over six months. An egg yolk can be given in the form of a soft custard at three months of age, and add .5 to 1.0 milligram. Sieved vegetables and sieved fruits contain from 0.1 to .5 milligram per ounce, and are well tolerated after the third or fourth month of life. Sieved pinto beans and pot liquor\* could be started by the fourth or fifth month of life.

The vitamin B<sub>1</sub> requirement, according to the League of Nations, has been given as fifty units daily for infants. Milk contains a relatively small amount of vitamin B<sub>1</sub>, but the quantity of milk consumed by babies who are well fed is believed by many to supply an amount of this material sufficient to satisfy their requirement. Though the evidence in general favors the view that a diet of milk, orange juice and cod liver oil supplies an adequate amount of vitamin B<sub>1</sub>, there is question as to whether a sufficient margin of safety is allowed. If the egg yolk administration is started at three months, an average of eight units in vitamin B<sub>1</sub> will be added. Sieved vegetables and fruits also will serve as a nutritional safeguard.

### CEREALS

The feeding of cereal has intentionally been minimized as it is questionable as to when cereal should be added to the infant's diet. The Council on Foods<sup>2</sup> makes the following statement:

'Cereal preparations in finely divided form have long been introduced into the diet of the baby early in life. Nearly two thousand years ago

Soranus of Ephesus, who advised milk as the only food for the first six months of life, suggested adding to the baby's diet at the age of six months crumbs of bread or flour prepared in water or wine and sweetened with honey. The nurses of ancient Rome commonly fed farinaceous foods after the fortieth day. In the eighteenth century in England it was common practice to feed water pap, consisting of boiled bread and water, along with human milk up to the age of two years. As shown by early American pediatric writings, this custom was followed in the American colonies. Wherever infant feeding is discussed, there is advised the use of cereal preparations as the earliest food besides milk. . . ."

Dr. P. C. Jeans<sup>3</sup> states that:

"The giving of this advice has persisted on the basis of belief in its merit, and there can be no question as to sincerity of the belief, though one may question its soundness. Early in the present century few pediatricists prescribed vegetables or fruits in the first year. Neither cod liver oil nor orange juice was given routinely, though both were used occasionally for special indications. Some babies received cereal water as a milk diluent at five to seven months of age, but cereal gruel as a separate food usually was not given before nine months. Of the cereals advised, the majority were processed and refined. The diet of the majority of babies during the first year consisted exclusively of milk and cereal, differing relatively little from the diet prescribed during the days of the Roman Empire.

"From the point of view of supplying the known nutritional needs of the infant, it would seem that cereals do not merit the position they have been given, namely, the infant's first solid food. Rather they should be relegated to third or fourth place, and their administration delayed until the capacity of the infant has increased and the cereals by their bulk do not replace or make difficult the administration of the other foods discussed. This same point of view is expressed in the following quotations from two different reports of the committee on nutrition of the League of Nations: 'There is a common practice nowadays of including cereal and cereal products in the diet of young infants. The immediate effect of giving such food-stuffs is often apparently beneficially, as indicated by the increase in weight. The modern teaching of nutrition, however, is against giving cereals before eight months or so, and even then only small amounts should be given. Many cereal products are very poor in vitamins and available mineral elements, and their inclusion in the diet limits the intake of milk and other protective foods. The practice of giving cereal foods before the age of six months is not advised; after this age, the use of potatoes, suitably prepared, is advocated as a partial or complete substitute for cereals. . . . the addition to the diet of all infants of small amounts of foods rich in iron is advocated from an early age. Foods recommended are egg yolk, if tolerated

\* Pot liquor is the fluid remaining in the cooking utensil after boiling green vegetables.

by the infant, or puree of green vegetables or carrots.'"

The Council on Foods<sup>2</sup> also states that:

"It is obvious that the blanket objections of the Committee of the League of Nations cannot apply to those cereal products which have been fortified with vitamin B<sub>1</sub> or with iron."

It is clearly evident that present-day knowledge of nutrition is incomplete. Nutritional essentials now unknown undoubtedly exist. As long as they remain unknown it is reasonable to believe that they are more likely to be obtained from a generously mixed diet than from one more restricted. The large variety of fruits and vegetables available would seem to offer better opportunity for a mixed assortment of food sources than the more limited varieties of cereals used in infant feeding. From the psychological point of view a wide variety of flavors seems desirable in the training of infants in good feeding habits; a greater variety is offered by fruits and vegetables than by cereals.

#### SUMMARY

A schedule for the modification of evaporated milk is given.

Orange juice, or its equivalent, should be added to the artificially fed infant's diet very soon after birth. The amount to be given daily is one to two ounces of orange juice, or two to four ounces of tomato juice.

Cod liver oil, or its equivalent, should be added to the artificially fed and breast-fed infant's diet soon after birth. The amount to be given is that

which will supply three hundred to four hundred units of vitamin D; the quantity of cod liver oil required to supply this amount will not exceed one teaspoonful daily.

Iron should be added to the infant's diet at about three months of age. The amount to be given is one teaspoonful of a 1 per cent solution of ferric ammonium citrate from three to six months, two teaspoonsful of this solution after six months of age.

An egg yolk should be given in the form of a soft custard at the third month to supply iron and vitamin B<sub>1</sub>.

Sieved vegetables should be given between the fourth and fifth months. Begin by giving one or two teaspoonfuls and gradually increase the amount until by the fifth month the child is taking at least two ounces.

Sieved fruits should be given between the fifth and sixth months. Begin by giving one or two tablespoonfuls and gradually increase the amount until the infant is taking from two to four ounces.

Cereals, although not essential, may be added at six or seven months. The amount served should not exceed two ounces, and it should never replace any of the above foods.

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## Incidence of Agglutinins for Proteus OX-19

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**T**YPHUS and Rocky Mountain Spotted Fever are rarely reported in Arizona. Since the laboratory diagnosis of these and other rickettsial diseases is based on the Weil-Felix reaction (agglutination of a strain of *Proteus*—usually OX-19), it seemed that a survey of the incidence of agglutinins for *Proteus* OX-19 might be of value in establishing a diagnostic titer, and might, in some cases, be of value in establishing a diagnosis in atypical or unrecognized cases of these diseases.

#### EXPERIMENTAL

Agglutination tests were performed upon all blood specimens submitted to the laboratory, without regard to the original examination requested. Most of these were submitted for laboratory tests for syphilis; a smaller number for the laboratory diagnosis of enteric or *Brucella* infections; and in

less than 30 cases, laboratory tests for the diagnosis of typhus or Rocky Mountain Spotted Fever were requested.

The rapid slide technic of Stuart and Welch<sup>1</sup> was employed in all tests. The antigens were purchased from Lederle Laboratories. Each lot of antigen was checked before use against known *Proteus* OX-19 antiserum, and all sera which gave positive slide agglutination tests, were checked by the conventional macroscopic tube test. The antigen used in this test and the antiserum were purchased from the Division of Laboratories, California State Board of Health. The results given by the two technics agreed well.

#### RESULTS

Ten thousand sera were examined. Of these 9968 (99.68%) did not agglutinate *Proteus* OX-19 antigen; 32 (0.32%) did agglutinate the antigen in some dilution. The results are given in Table I.



TABLE I

Patient	Maximum agglutinating titer	Remarks
V. M.	1:80	Female Mexican. Routine. Prenatal Clinic.
L. H.	1:40	Female Indian. Submitted for Kahn test.
B. G.	1:20	Female White. Submitted for Widal. Negative.
G. B.	1:20	Male Mexican. Submitted for Kahn.
J. W.	1:20	Male White. Dairyman. Routine.
J. A., Jr.	1:40	Male Indian. Submitted for Kahn.
J. A.	1:20	Male Indian. Submitted for Kahn.
F. P.	1:320	Female Mexican. Prenatal Clinic. Kahn.
L. T.	1:80	Female Indian. Submitted for Kahn.
E. M.	1:40	Female Mexican. Submitted for Widal. Agglutinated Typhoid H and Brucella abortus 1:80.
C. V.	1:20	Male Mexican, Venereal Disease Clinic.
S. S.	1:40	Female White. Prenatal Clinic.
E. V.	1:20	Female Mexican Child. T. B. Sanitarium.
S. G.	1:40	Male Mexican Child. T. B. Sanitarium.
B. P.	1:80	Male Mexican Child. T. B. Sanitarium.
M. L.	1:40	Female Mexican Child. T. B. Sanitarium.
L. R.	1:160	Female Mexican Child. T. B. Sanitarium.
B. W.	1:40	Female White Child. T. B. Sanitarium.
A. M.	1:40	Female White. Prenatal Clinic.
C. L.	1:40	Female Mexican. Prenatal Clinic.
M. G.	1:40	Female Mexican. Prenatal Clinic.
V. G.	1:80	Female Mexican. Prenatal Clinic.
C. C.	1:20	Tentative Diagnosis—Rocky Mountain Spotted Fever.
H. J.	1:40	Female White. University Student.
A. D.	1:80	Female White. University Student.
M. H.	1:40	Female White. University Student.
B. M.	1:80	Female White. University Student.
C. W.	1:40	Male White. University Student.
M. H.	1:40	Male White. University Student.
E. W.	1:20	Male White. University Student.
J. J.	1:320	Male Indian. For Kahn test.
M. W.	1:40	Female White. Diagnosis uncertain.

## DISCUSSION

It is apparent that the incidence of agglutinins for *Proteus* OX-19 is quite low. The specimens represent all age groups, and all races, occupations,

social and economic groups found in Southern Arizona.

Among a group of 1400 students at the University of Arizona, only seven (0.5%) showed the presence of these agglutinins, which is only slightly higher than that of the entire group.

An attempt was made to determine whether or not there was any history of infection. Although this could not be obtained in every case, with the exceptions of cases B. G. and C. C., there was no apparent evidence of past infection.

A few sera gave agglutination in titers which might be considered as diagnostic. These patients came from lower social and economic levels, and information secured regarding the sanitation of their immediate environment suggested that there was ample possibility of insect-borne infection.

## SUMMARY

In a study of 10,000 blood specimens, 32 (0.32%) agglutinated *Proteus* OX-19 antigen. With two possible exceptions, there was no history or suspicion of typhus or typhus-like infections.

It would appear that the incidence of agglutinins for *Proteus* OX-19 is quite low among the population of southern Arizona.

University of Arizona.

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## Some Actions of Alcohol

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SINCE alcohol is more commonly used for its drug action rather than for its qualities as a food it is classified as a drug. As a food it does not go through the usual process of digestion but is absorbed directly from the stomach and small intestines. True foods are oxidized in the body furnishing heat, energy, and repairs for the natural waste of living tissue as well as being able to be stored in the body for future use. Alcohol cannot meet these qualifications though it is a fuel food for immediate use in small quantities because of its limited absorbability. However, the amount absorbed is oxidized, mainly in the muscles of the body and used as food. It is further classified as a drug because it temporarily or permanently modifies the activity of the body organs including the brain and nervous system, and because it may cause acute or chronic poisoning.

The complete solubility of alcohol in water and the body fluids allows for a complete absorption within the stomach and small intestines without alteration. Its rate of absorption is influenced by its dilution, the amount taken aboard, and the stomach contents when ingested. If taken with food the rate of absorption is diminished and fatty foods such as cream, butter, fats, and olive oil further diminishes the rate of absorbability.

Alcohol can be detected in the blood within a few minutes after ingestion. The whole amount ingested will be found equally distributed in all tissues of the body until eliminated or burned in the tissues as fuel because there is no mechanism in the human body for storing alcohol in any organ, or for regulating the quantity in the blood stream.

Only 10% of the amount taken is eliminated directly by the body. Of this amount 3% is eliminated by the kidneys and the remaining 7% by the skin and lungs. The urinary stimulation experienced with the ingestion of alcoholic beverages is thought to be due to the fuel oils it contains as well as the increased fluid intake.

At this point it might be of interest to mention the Bogan Test for alcoholic concentration within secreted urine as an accurate test for the degree of intoxication:

Less than 1 mg. per c.c.	Dry and decent.
1 to 2 mg.	Delighted and devilish.
2 to 3 mg.	Delinquent and disgusting.
3 to 4 mg.	Dizzy and delirious.
4 to 5 mg.	Dazed and dejected.
5 mg. and up.	Dead drunk.

Unfortunately no directions are given with the test for reaching the various stages and remaining as such.

The remaining 90% of the original amount ingested and absorbed must, therefore, be burned

in the tissue as fuel. However, no matter how high the concentration of alcohol in the blood stream it is oxidized and eliminated at the constant rate of approximately 10 c.c. per hour, the excess being retained in the blood and other tissues of the body. Exercise has no effect on its elimination nor upon the rate of oxidation even though oxidation of the alcohol takes place in the muscles.

The maximum concentration within the blood and tissues takes place within a half to two hours, the amount being proportional to the original intake. The habitual drinker is less intoxicated by a given dose than the non-drinker. However, it is said that the alcoholic acquires no increased resistance to alcohol, but that the increased tolerance depends upon the diminished rapidity of absorption and the increased power of oxidation. After a decade, more or less, chronic alcoholics may lose their previously acquired power of oxidation and then be as much if not more affected by alcohol than the beginner.

As stated before, it disappears from the blood at a constant rate which is much slower than the absorption rate, thus accounting for the accumulative effect of large doses.

Alcohol when oxidized in the body is eliminated as carbon dioxide and water. When sugar is burned in the body the amount of oxygen consumed is equal to the carbon dioxide eliminated. Fats and proteins use more oxygen than is eliminated as carbon dioxide and alcohol requires a still greater amount of oxygen, thereby producing a greatly lowered respiratory quotient. The action of alcohol on the higher centers acts as a depressant on the respiratory center and the two will, therefore, cause a decreased pulmonary ventilation. Further, there is an accumulation of carbon dioxide in the blood stream from the depressant action on the respiratory center producing an acidosis. The acidosis makes itself felt and the respiratory center is the over-stimulated which in turn brings about an alkalosis and which accounts for the marked variations in breathing that the inebriate brother often shows. And so, since flying in high altitudes causes similar variations in breathing due to a diminished oxygen supply, alcohol within the blood stream in high altitudes would accentuate the condition to a considerable degree. Unconsciousness and death in acute alcoholism is due to a paralysis of the respiratory center of the brain.

#### ACTION OF ALCOHOL

Alcohol, like chloroform and ether, belongs to the group of narcotics, and in common with other members of the group it is a depressant. It has been shown that it acts as a depressant on the nervous system to impair, even in small quantities, the sensory, motor, and mental functions. While there is an initial feeling of improvement and well being the highest faculties are affected first. Self criticism, loss of motor co-ordination, impaired reasoning and judgment, lowered sensory acuteness and impaired awareness of the environment—all resulting in freedom at the expense of efficiency.

Alcohol remains longer in the brain and spinal fluid, and it has been shown by various studies that its primary effect is to impair utilization of oxygen by the tissues. The nervous tissue is more severely handicapped by the deprivation of oxygen than any of the other tissues of the body, since the consumption of oxygen and the elimination of carbon dioxide makes up its basic activity. Therefore alcohol within the spinal fluid and blood stream impairs the mind and body primarily by depriving the nervous system of its normal oxygen supply.

The effect of alcohol upon the circulatory system depends upon the amount absorbed after the intake. That is, in a small absorption the initial effect is one of stimulation due to its depressant action upon the inhibitory center of the brain, causing a transient rise in the pulse rate and systolic pressure with an increased cardiac output. However, in large doses there is a fall in pressure due to the peripheral flushing from a capillary dilatation. Normally an efficient circulation depends upon the rate and strength of beat being controlled by the nervous system and the arterial resistance or pressure by a vaso-constriction. Therefore, since alcohol is a depressant this arterial vaso-constriction does not take place and the blood pressure falls.

From the above statements it has been pointed out that alcohol depresses the nervous system, the digestion, the respiration and the circulatory system. It is then primarily a depressant and not a stimulant so far as the body is concerned.

#### USE OF ALCOHOL

It is said that overindulgence in intoxicants in youth is an endeavor to cast off restraint and enjoy emotions; in the more mature life or later life, and in using intoxicants as narcotics at all ages, it is the result of a disturbance in the psyche and personality. The so-called "physical thirst" and the "inherited desire" are not realities, but merely manifestations of psychic restlessness due to psychological causes. It is sometimes said that weakness of will causes an individual to drink to excess. However, this is thought to be an intensification of emotions rather than a weakness of will, as all narcotism of alcohol is said to have an emotional foundation.

Dipsomaniac or periodic alcoholism in the beginning is said to be usually referable to the entrance of unhappy and suppressed emotions into the consciousness at regular or irregular intervals with such intensity that they are intolerable. Periodic drinking, especially in women, is almost always a conscious or unconscious attempt to obtain forgetfulness. Unhappy love affairs, disturbed domestic tranquility, disappointment, and everything that can produce bitterness may drive the individual to seek solace in drink. And unless the psychic equilibrium can be obtained the indulgence is continued.

A type of periodic alcoholism that is coming to be more generally recognized is that of the mild,



recurrent, manic-depressive insanity. This type comes on irregularly as the result of worry, physical strain, and overwork. It differs from the other forms of dipsomania in that the debauches are apt to begin with excessive sexual indulgences. The consequent drinking is usually an attempt to prolong the manic ecstasy.

#### EFFECTS ON AVIATORS

It has long been observed that one man's meat is another man's poison. What then is the result of drinking mixed with aviation? This, of course, could not include the dipsomanics, mild manic-depressives, and heavy drinking in general because it is taken for granted that they will be ruled out in the process of selection and examination. However, the attitude of a group of veterans, engaged in a pursuit requiring the highest in physical perfection and mental alertness toward the "Gentlemanly art of drinking" is of much interest. A summary of the study of a group of National Guard airplane pilots as observed by their first surgeon along this line is offered.

A group of 22 pilots with an average age of 36.18 years and an average commissioned service of 10.7 years, were observed over a period of 5 years. Of this number, 3 or 13.6% were total abstainers. 87.4% were purely social drinkers. None were solitary drinkers and none could be considered alcoholics within the legitimate meaning of the term. Of the 3 total abstainers, two were definitely of the extrovert type, and the third of less definite extrovert makeup and with many introvert qualities.

Among the older and more experienced flyers there was practically no tendency to fly while drinking. Experience has taught them the unwisdom of such practice. The younger graduates were as a whole inclined to be rather abstemious.

There was no appreciable cutting down on performance due to alcohol. One pilot with 4500 hours flying time and a splendid World War performance had used alcohol continually for over a period of twenty years without loss of performance.

It was brought out by these flyers that any preparation for high altitude work should include several days of total abstinence.

Also that the particularly dangerous feature of the use of alcohol appears to be in its use in a mistaken attempt to overcome fatigue and staleness, or in an attempt to boost oneself up to a performance for which the individual is not physically or mentally fitted.

The opinion of their Flight Surgeon at the conclusion of his study was that the physical and mental endowment of the individual as determined by his inheritance and early conditioning has more to do with his performance as a pilot than any incidental use of alcohol.

To go further, it is a known fact that a pilot, while in flight, must adjust to an environment which is deficient in oxygen due to the diminution in barometric pressure with increasing altitude.

This lack of oxygen at high altitude simulates precisely the effect of alcohol. Here in both instances the nervous system is being deprived of an adequate supply of oxygen. Both kinds of oxygen want, anoxemia, are insidious and leave one incapable of making sound judgments of one's behavior or of the behavior of others. The effect of alcohol then must be greatly accentuated after taking on even one drink with the best of intentions and then rolling out the old sky-buggy and flying high wide and handsome. This accentuation is due to two types of oxygen want present within the system; first from the diminished amount present in the atmosphere due to the increased altitude, and the second type due to the direct action of the alcohol itself in the failure of the body tissues to be able to use efficiently the oxygen which is available in the blood.

And so we come to the question of what really is the relation of alcohol to aviation medicine. Should it be classified purely as a drug because of its narcotic and harmful effect on the human body? Or shall we classify it as food and a stimulant because of its transient action in small doses?

The work of McFarland and Forbes has shown that it is important for pilots not to fly while actually imbibing under ordinary circumstances, that it is particularly so when going to high altitudes. They have demonstrated that the percentage of alcohol oxidized in a given time is less at high altitudes, and the amount of alcohol remaining in the blood after 12 hours is considerably larger at high than at normal altitudes. They further found that the impairment of auditory acuity after the taking on of alcohol was greater at high altitudes than at sea level.

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The Eskimo population of the Western Canadian Arctic is showing a distinct and dangerous decline from tuberculosis and other diseases of the white man. The Rev. H. R. Rokeby-Thomas, an Anglican missionary who has spent 5 years in a parish on Victoria Island, which extends up into the neighborhood of the North Pole, has under his care 750 Eskimos, of whom 70% are ill with tuberculosis in varying stages. "There is certainly a definite downward trend in population, in my parish at least," says the missionary, "and that probably is true of other parts of the Western Arctic." He suggests that the provision of medical care and hospitals might go far towards solving the problem, but many obstacles would have to be faced and the cost would be heavy. Transportation would always be a problem, but he is convinced that something should be done before Canada finds her Eskimo population shrunk to a pitiful remnant of its former thousands.—*Contact*, Nov., 1939.

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## MEDICAL PREPAREDNESS

Yet another phase of medical preparedness is well explored by The New England Journal of Medicine:

"The first prerequisite of a nation prepared to defend itself successfully is physical, mental, and moral health. As Surgeon General Thomas Parran has stated, 'It is urgent now that the people of this nation be physically tough, mentally sound, and morally strong.' And it is obvious that the conquests in Europe during the past eleven months have been consummated by a nation whose people are healthy, even though their moral standards, at least according to American ideas, are open to question.

National health is an extremely important problem, even in times of peace, and much has been accomplished, particularly during the past twenty-five years, in its promotion. Little or nothing, however, has been done toward a health census of large groups of the population, the correction, so far as possible, of the remediable faults that are found, and the nation-wide application of approved methods of preventive medicine.

The conception as to how all these could be achieved is difficult. As a beginning, Surgeon General Parran has suggested the appraisal of the 300,000 young people employed by the National Youth Administration and of the nearly 2,000,000 men and women enrolled under the Work Projects Administration, with a subsequent listing of

those best qualified or, because of remediable defects, potentially qualified for industrial training. Selective, compulsory military training, with physical examination of those drafted into service, would furnish data on a certain group of young men but would neglect by far the majority of the population. Through group examination little would be gained toward the correction of the nutritional defects that are known to exist among a large proportion of the working class, and preventive medicine would receive scant consideration.

While it is true that all these problems have, for many years, been the concern of various federal agencies, public-health departments of states, cities and towns, national foundations and other organizations interested in health and disease, and the associations and the individual members of the medical and allied professions, the work of each has been done independently. The present crisis demands intelligent co-operation, and the need for a medical co-ordinator, as suggested by Surgeon General Parran and by the Committee on Medical Preparedness of the American Medical Association, is probably more urgent in this aspect of medical preparedness than in any of the others. The fact, as has already been suggested in the Journal, it seems as though the conditioning of the nation were so important and so vast an undertaking that it deserves the entire attention of an extremely capable and well-qualified physician rather than that portion of time which one concerned with all the problems of medical preparedness could devote to it. The appointment of someone to assume this responsibility is essential, not only as a war-time but also as a peace-time measure!"

## TUCSON SESSION, SOUTHWESTERN MEDICAL ASSOCIATION

In this issue there is a preliminary announcement of the forthcoming annual session of the Southwestern Medical Association in Tucson. Last year the twenty-fifth anniversary of this society was observed in El Paso, where all previous attendance records were broken. This year the Tucson group expects to stage a compact, smoothly managed scientific post-graduate meeting.

Ordinarily the society meets in El Paso, unless specifically invited to convene elsewhere. Tucson and several other Southwestern cities requested the 1940 session. After consideration of all pertinent factors, Tucson was awarded the meeting for this November. The days and dates are: Thursday, Friday, Saturday on November 21, 22, 23. Hotel headquarters will be the Pioneer.

In addition to the scientific sessions and exhibits there is to be enough extra-mural entertainment to provide a balanced affair. The annual meeting of the Board of Managers of SOUTHWESTERN MEDICINE is scheduled for one day during the main sessions. Sports fans among the profession will want to see the Border Conference football game on Saturday night, November 23, between



the University of Arizona and the University of New Mexico. Reserved seats, costing \$1.65 each, may be obtained from Dr. J. B. Littlefield, 311 Valley National Bank Building, Tucson. The Pima County Woman's Auxiliary is planning various functions for the visiting ladies.

The list of guest speakers, together with their discussion topics and times of appearance, will appear in the final program as a supplement to the October issue of *SOUTHWESTERN MEDICINE*. Enthusiasm of the Tucson committees as to progress to date in planning this year's meeting is high. These workers feel that this should be one of the best sessions ever held by the association. Reservations for hotel accommodations should be sent now to any member of the Hotel Committee: Dr. J. B. Littlefield, chairman; Dr. Dake Biddle, 123 S. Stone Ave.; Dr. V. A. Smelker, 221 Valley National Bank Building. The vice-president of the association, Dr. C. A. Thomas, is also general chairman for the November session.

Tucson in November is a fine place to be. Warm days and cool nights will reward the physician who needs a few days respite from his daily grind at home. Some of the best teachers in the Americas will be on hand to guide the scientific work. Southwestern physicians owe it to their patients and themselves to attend this annual session of their post-graduate study group.

The program as arranged to date:

#### *Internal Medicine—*

Dr. T. T. Mackie, Columbia University, New York City.

1. General Discussion of the Physiology and Clinical Significance of the Vitamins.
2. Studies of Vitamin K Deficiency in Non-Jaundiced Individuals.
3. The Mechanism and Management of Chronic Ulcerative Colitis.
4. The Pathology and Treatment of Amebic Dysentery.  
Lantern Slides.

Dr. George Fahr, University of Minnesota, Minneapolis, Minn.

1. The Treatment of Coronary Thrombosis.
2. The Mechanism of Hypertension and Edema Formation in Nephritis.

Round Table Discussion: Recognition and Treatment of Cardiovascular-renal Disorders.

#### *Anesthesia—*

Dr. John Lundy, Mayo Clinic, Rochester, Minn.

1. Intravenous Anesthesia.
2. Some of the Indications and Contra-Indications to Commonly Used Anesthetics.

Slides and Pictures.

#### *Surgery—*

Dr. Richard B. Cattell, Lahey Clinic, Boston.

1. Surgical Treatment of Peptic Ulcers.
2. Management of Ulcer of the Large Bowels.

Round Table Discussion: Thyroid Diseases and Ulcerative Colitis.

#### *Eye—*

Dr. William L. Benedict, Mayo Clinic, Rochester, Minn.

1. The Eye Findings in Endocrinology.
2. Pathology of the Eye in Cardiovascular-renal Disease.

### VOLUNTARY PATRIOTISM

Currently a number of El Paso physicians are discussing a voluntary plan of pooling a percentage of the income of those not called up for duty with the armed services for the benefit of those who do go. The plan is not being sponsored by the county medical society. However, participation is being embraced enthusiastically by not only the younger men almost sure to be ordered to duty, but also by older physicians not likely to serve with the Army or Navy. Discussants of the project hope to awaken similar moves elsewhere in the country. As tentatively inaugurated, the plan appears to be a fair, patriotic way of partially solving a sore problem. And, lest growing discontent among younger physicians forces action by governmental agencies, it might be expedient for organized medicine to assume this developing obligation.

### ATTENTION: NEW MEXICO PHYSICIANS

If you have mislaid your A. M. A. questionnaire on Medical Preparedness, or if by chance you failed to receive your copy, the office of your secretary will be glad to furnish you with the same.

Officers of the New Mexico Medical Society hope that when the final analysis is made, our state may rank high in the percentage of questionnaires returned, and it would be fine if New Mexico could register a 100% return. Perhaps this latter is physically impossible, but surely we can closely approach the 100% rank if every member will sit down right now and make certain that he has returned his completed questionnaire or do it in the next few minutes.

Remember, filling out the questionnaire is not enlisting in a military service, but supplies necessary data for our national medical organization and our country—by simply creating an accurate survey of the availability of medical personnel for whatever emergency might arise.

If you haven't answered it yet — DO IT NOW.

—L. B. COHENOUR, M. D., Secretary, New Mexico Medical Society.

*Special Section*  
**Arizona State Medical Association**

PRESTON T. BROWN, M. D., *Associate Editor*  
403 Professional Bldg., Phoenix, Arizona

## MEDICAL PREPAREDNESS

### QUESTIONNAIRES TO ALL ARIZONA PHYSICIANS

During the summer, the Committee on Medical Preparedness of the American Medical Association, at the request of the Surgeon Generals of the United States Army, the Navy and the Public Health Service, mailed questionnaires on medical preparedness to every physician in Arizona, and other states, listed in the Directory of the American Medical Association as residing or practicing in that state. The questionnaire was developed with the advice and assistance of the Surgeon Generals in question as part of the initial plan for preparedness of the medical profession to enable our country to meet any emergency which may arise. Questionnaires sent Arizona physicians totaled 594.

### RESPONSE TO QUESTIONNAIRES— A RECORD "HIGH"

As State Chairman of Medical Preparedness, it has been my first duty to urge the return of the filled questionnaires to the American Medical Association. As of September 16, my records show that of the 594 questionnaires mailed Arizona physicians, 358 went to our own membership; 111 to physicians in active practice but not members of organized medicine; and 125 to physicians engaged in Indian Service, Veterans' work, CCC medical field, with 53 of the number being retired from active practice due in most cases to advanced age. Of the Association membership of 358, all but 8 have returned their filled questionnaires, with 3 of this number known to be out of the state for an extended period of time. Of the 111 non-members, all but 9 have turned in their questionnaires. Figures from physicians unlicensed in the state but engaged in the services named will be reported later, but indications also point toward a record reply.

### CHICAGO CONFERENCE

A conference at Chicago is being held on September 20-21, with all state chairmen in attendance for the purpose of submitting reports on the questionnaires and for receiving instructions as to future phases of the work, outlining and discussing

the same. Arizona physicians will be informed as to the results of this conference immediately after its conclusion and the return of the Arizona chairman.

### FURTHER MEDICAL PROCEDURES

Completion of the questionnaires is but the first step in the medical preparedness program, it being apparent that much work remains to be done. The business of examining draftees for service will soon be the order of the day, information on this feature of the work to be submitted the county medical societies immediately after the conclusion of the Chicago conference.

### MEDICAL OBLIGATIONS

Our obligations as a profession are four-fold. First, we must supply the necessary medical service for our armed forces. Second, we must continue our care of the civilian population. Third, we must maintain and continue our Public Health Service, and fourth, we must meet the specialized service which is bound to arise due to the vast industrial expansion program now under way for the purposes of national defense.

### ARIZONA STATUS COMMENDABLE

The Arizona physicians have demonstrated their patriotic willingness to meet this four-fold program and, as State Chairman of the Committee on Medical Preparedness, I take off my hat to the physicians of this state who have responded so overwhelmingly, so promptly and willingly to this first step in our medical preparedness program. This assures a magnificent cooperation all the way through stages of the program yet to come. Each and every physician in Arizona, who has so magnificently responded, may also be sure that Uncle Sam will appreciate the report in your behalf that will go to him from the Committee on Medical Preparedness of the American Medical Association. Thank you, indeed, on behalf of your country, and your profession for your patriotic response.

CHAS. S. SMITH, M. D.,  
Chairman, Committee on Medical  
Preparedness.



## President's Page

### WORK TO BE DONE

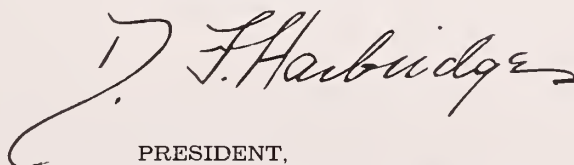
FALL sees the beginning of the main activities for all medical associations. The late summer has been well occupied in getting the work of medical preparedness under full steam ahead. Dr. Chas. S. Smith, as State Chairman for this program, has done an excellent piece of work, with the cooperation of the physicians of the state, as indicated in his report on the opposite page.

While medical preparedness will continue to occupy Association attention for some time yet, other activities must also move forward. Soon the Executive Committee will submit to the membership outlines of the programs for our various committees. With the generous response that has been given the medical preparedness program, it is anticipated that the membership will also fall in line with the other activities of the Association which dovetail into projects of state-wide and national aspect.

This is a legislative year for Arizona and the membership is urged individually to send in any suggestions, ideas, or reactions they may have relative to possible legislation dealing with public health, control of various industrial diseases, and inform the Association as to activities along these lines that may be advocated in the various communities of the state. Much has been said during recent political campaigns, relative to public health, control of venereal diseases, silicosis, and similar health matters. If you have any definite information on the subjects through activities in your communities, the Association would appreciate having the same. Address all communications to the Arizona Medical Association, 202 Security Bldg., Phoenix, and the information will be transmitted to the proper committee or officer.

The Executive Committee of the Council and the Committee on Ethics have been active during the summer and have laid plans for the progress of the Association and its component societies, all of which will be presented the local societies upon their resuming activities for the fall and winter. Charters are now ready for issuance when stipulations for society organization are fully met. Some societies hold charters from the earlier days of the Association while others have not followed through on that feature but have expressed recent desire for the same. Consequently the Council authorized the printing of new charters which will be ready for presentation shortly.

Faternally yours,



PRESIDENT,  
ARIZONA STATE MEDICAL ASSOCIATION.

*SPECIAL SECTION*  
Southwestern Medical Association

**MEETING**  
Tucson, Arizona  
November 21, 22 and 23, 1940

Official Convention Headquarters  
PIONEER HOTEL

RATES { Single room—\$3.00 per day.  
Double room, double bed—\$4.00 per day.  
Double room, twin beds—\$5.00 per day.  
(All rooms with private baths)

**PROGRAM**

Anesthesia—Dr. J. S. Lundy of the Mayo Clinic, Rochester.

Surgery—Dr. R. B. Cattell of the Lahey Clinic, Boston.

Internal Medicine—Dr. Geo. Fahr, Department of Medicine, University of Minn.

Internal Medicine—Dr. T. T. Mackie, Columbia University,  
Assistant Clinical Professor of Medicine.

Guest speakers on Industrial Surgery, Gynecology, Eye, Ear, Nose and Throat are being arranged for, but have not definitely accepted to date.

This will be a real post-graduate assembly with luncheon speakers, scientific exhibits, and an abundance of opportunity to impart and obtain ideas.

There will be no mix-up or lost motion because of insufficient hotel accommodations.

**Side Issues**

Bring the ladies. The Ladies Auxiliary of the Pima County Medical Society are planning great things for them.

There will be banquets, smokers and all the trimmings for a medical convention.

**FOOTBALL**

On Saturday night, November 23, at the University of Arizona Stadium, a game will be played between the University of New Mexico and the University of Arizona. The games between these traditional rivals have always been good and clean. We are asking you to stay for this event. Reserve seats cost \$1.65 each including the tax. Send your checks and make reservations early through the Hotel Arrangements Committee, in order that we may group the medical people together.

**COMMENT**

If you are not already a member of this association, you will have to pay an additional \$3.00 membership fee on registration unless you mail your dues in now. Registration fee, \$5.00 for each person.

Make all reservations through the Hotel Arrangements Committee.

**HOTEL ARRANGEMENTS COMMITTEE:**

J. B. Littlefield, Chairman, 311 Valley National Building.

Dake Biddle, 123 South Stone Avenue.

V. A. Smelker, 211 Valley National Building.



## LABORATORY ESSAYS

Mrs. H. presented herself March 31, 1940, with an acute vaginal discharge. Smears and cultures showed definitely the presence of gonococci. Appropriate treatment resulted in the disappearance of symptoms with apparent clinical cure within about 3 weeks time. After about 1 week the patient was seen again with an acute abdominal pain centralized in the right lower quadrant, slightly lower than McBurney's point. The question of differential diagnosis immediately presented itself, as the recent exhibition of acute gonorrhea definitely favored the diagnosis of an acute saphyphilitis. The blood count done at this juncture showed: Total white count, 14,600; polynuclear neutrophils, 82%; stab forms, 19%; lymphocytes, 16%; mononuclears, 2%. This count being compatible either with an acute appendicitis or acute salpingitis, additional help was needed.

A sedimentation rate was done which resulted in the following: 18 mm. drop in the red cell column in a 5-mm. tube in 1 hour and 15 minutes. On the strength of this finding a diagnosis of acute appendicitis was made and surgery was performed at once. A definite acute inflammatory reaction of the appendix was found, which on section was seen to consist of a diffuse polynuclear infiltration with beginning necrosis of the mucosa. The tubes and ovaries were found to be entirely normal.

The above is illustrative of a value of the sedimentation rate in the field of differential diagnosis. This comparatively simple and inexpensive laboratory procedure has a wide field of usefulness, not only in diagnostic procedures, but also as a prognostic sign in a number of the chronic infectuous diseases.

In the field of gynecology there are a number of instances in which the rate of sedimentation of the red cells is of significant value. Not only in cases similar to the one quoted above, but in other types of inflammatory reactions of the pelvic organs sedimentation rate may be of distinct diagnostic value. It is useful in differentiating large fibroid masses from the pregnant uterus, the rate being definitely normal in the non-malignant neoplasm and being increased in pregnancy beyond the third month.

It is definitely useful in differentiating any malignancies in the gastro-intestinal tract from functional disturbances. In malignancies the rate is definitely increased, while in the functional disturbances it is normal. Likewise, in those malignancies which are operative a slowing to normal of the sedimentation rate generally follows surgery. If this occurs it is a good indication that most, if not all, of the neoplasm has been removed. An unexplained return of the rate to a rapid figure indicates recurrence or metastasis.

The test is of distinct value in differentiating between certain of the rheumatic fevers and rheumatoid arthritis. Likewise, bacterial endocarditis

may be suspected when the rate is very rapid. It is of value in distinguishing between coronary thrombosis and angina pectoris.

In pulmonary tuberculosis it is of distinct value in prognosis, a slowing of the rate indicating healing of the lesion. In pneumonia a definite increase of the sedimentation rate may predict in advance of physical findings an extension of the pneumonic process.

If one wishes to utilize this test it becomes necessary to familiarize himself with the various techniques that are employed. At the present there is no standard recognized technique. The interpretation, of course, depends upon which of these is used.

These few suggestions, of course, do nothing more than to call attention to the value of this simple procedure and to point out that it may be profitably utilized in many different fields.—L. O. Dutton, M. D.

## NEWS

### *El Paso*

A regular meeting of the City-County Hospital Staff was held Wednesday, August 21, 1940, at 6:30 P. M. at City-County Hospital. The program was as follows:

Case of Death from Heat Treatment—Dr. Walter Stephenson.

Autopsy findings by Dr. W. W. Waite.

Dr. Heinz Haffner announces the opening of his office in the Mills Building. Dr. Haffner's practice is limited to general surgery.

The El Paso Medical and Surgical Clinic announced the association of Dr. J. T. Fowler, formerly of Vanderbilt University. Dr. Fowler limits his practice to pediatrics.

The regular Staff Meeting of the Hotel Dieu Sisters' Hospital was held Tuesday, August 6, 1940 at 12:10 P. M. in the auditorium of the Nurses' Home. Luncheon was served. The program was as follows:

"A Case of Gunshot Wound of the Thigh with Repeated Secondary Hemorrhages with Amputation."—Dr. B. F. Stevens.

Discussion by Drs. E. B. Rogers and Louis Breck.

The regular monthly Staff meeting and dinner of the Southwestern General Hospital was held Thursday, August 29th, 1940 at 6:30 P. M., in the hospital auditorium. The program was as follows:

"Phlegmonous Gastritis"—Dr. F. P. Miller.

Discussion by Dr. C. E. Webb and Dr. George Turner.

The regular Staff meeting of the Hotel Dieu Sisters' Hospital was held Tuesday, September 3,

1940, at 12:10 P. M. in the auditorium of the Nurses' Home. Luncheon was served. The program was as follows:

"Diarrhea, Its Cause and Treatment"—Dr. C. F. Rennick.

Discussion by Drs. L. T. Cox and J. T. Bennett.

## MISCELLANY

### MEDICINE'S IDEALS

In this light, medicine more than ever before is a career of public responsibility. It is the duty of the medical profession to extend medical knowledge, to elevate the standards of medical education, to encourage the enactment and enforcement of just medical laws, to promote friendly intercourse among physicians and to direct and enlighten public opinion on the great problems of medicine, so that the profession will become more capable and honorable within itself and more useful to the public in the prevention and cure of disease and in prolonging and adding comfort to life. The service rendered by physicians infiltrates with its influence the destinies of individuals and families, and in the aggregate the destinies of the communities and the nation.

Medicine must be actuated by lofty principles. Medicine is the trustee of society in the care of the sick and injured; its policies must always be governed by this fundamental fact. The good of society must be the sole aim of its public policies and the good of the patient the first consideration in the relations between physician and patient.

Great things have been accomplished in medicine in the last half century. The span of life has been increased from thirty-five to fifty-eight years. Our people owe the medical profession a debt of gratitude that they seem little inclined to pay. In the past fifty years, no science has made more progress than has medicine. Wonderful discoveries have been made in diagnosis and treatment. Many times our fads and fallacies have been stepping stones to something better. The history of medicine is a story of outlived fashions. An eminent teacher has said: "Hard and conscientious work, accurate observation, sound reasoning, a mind free from obsessions and superstitions, a firm belief in the possibilities of medicine as an art and as a science; these are the things that raised medicine to its present greatness; these are the things that will carry it onward, always."

—Jo. Iowa St. Med. Soc.

### SPECIALIST'S TRAINING

In line with this, and as another by-product of the new system, and of the boards of certification, which have done so much to bring it into effect, there will be an increased sharpness in the division between practitioner and specialist. As ade-

quately trained men become more numerous and as the criteria of such training become recognized more generally it will be increasingly difficult for men to shift from the first status to the second. To a large extent this will be a safeguard to the members of the community, who will thus be protected from untrained, self-styled "specialists." There are potential liabilities, however. Even an inadequate surgeon or roentgenologist is far better in an emergency than no surgeon or roentgenologist at all. It is to be hoped that requirements and regulations preceding certification will not be pushed to such an extreme that small communities which cannot support a variety of fully qualified specialists will be deprived of essential services.

Furthermore, it is most important that the specifications of training shall not become too rigid. There is gentle irony in the fact that men who to a large extent were self-taught believe that their successors cannot achieve an education in the same manner. Instruction is a short cut to knowledge: properly imparted and assimilated it will greatly accelerate the acquisition of knowledge and will prevent many a needless mistake, but all the instruction in the world will never eliminate the need for self-education. It is fair enough to demand proof of qualification, but the gateway must never be closed to the man who chooses the unconventional and original approach. By present standards Harvey Cushing's training in brain surgery was shockingly inadequate!

—N. E. J. of Med.

### EKG INTERPRETATION

Competent specialists in the cardiovascular field have the frequent experience of encountering patients who have been condemned to inactivity or invalidism, or who suffer from a profound cardiac neurosis, because of a diagnosis of "coronary disease," or "myocarditis," or "myocardial damage," based entirely on minor changes in the electrocardiogram that have no specific meaning. There is complete agreement among authorities that such diagnoses should never be made on the electrocardiogram alone; one of the foremost among them has said this:

"In general it is most unwise to base any diagnosis which involves a commitment as to the presence of coronary abnormality of any kind upon the electrocardiogram alone. To make a diagnosis of coronary sclerosis or of angina pectoris from the electrocardiogram alone is impossible. The electrocardiographic tracings should be interpreted with a full knowledge of the clinical findings; and the electrocardiogram should be given no more and no less weight in reaching a final conclusion than other clinical or laboratory data."

The inexperienced physician who makes unwarranted diagnoses without hesitation is chiefly, but not wholly, to blame for the present deplorable situation. The physician who refers patients for



electrocardiograms and then unquestioningly accepts such diagnoses must share the responsibility. It is astonishing that a man who would scorn to accept a slight increase in the leukocyte count alone as clear proof of appendicitis or pneumonia readily accepts a slight and unimportant alteration in the electrocardiogram as proof of "coronary artery disease," and bases his prognosis and treatment upon this diagnosis.

—Conn. St. Med. Jo.

#### CHARITY AT HOME

Probably the greatest source of unpleasantness between physicians is possession of patients. For some reason the physician has acquired the feeling that his patient is his chattel, and if his patient consults another physician, his chattel is stolen, and the battle is on. In squatter sovereignty "possession is nine points of the law," but in medicine possession can be retained only by virtue of the continued confidence of the patient in conscientious, skillful and understanding care. The question of medical ethics is frequently embarrassing to the patient, but regardless of ethics the patient is entitled to consult whatever physician he wishes, and his choice is based on confidence in the integrity and the ability of the individual doctor. In the oath of Hippocrates the physician

swears by Appollo and Aesculapius to impart a knowledge of the art to disciples. The treatment accorded the young doctor who enters a community does not ordinarily comply with the Hippocratic oath, and charity and kindness do not characterize his reception.—Jo. Iowa St. Med. Soc.

#### (CC) OR (ML)

Many of the older doctors regretted the passing of the terms drop, dram and ounce, when the new terms cubic centimeter, gram and milligram came into existence. Now cubic centimeter (cc) is also on the way out. Following action by the American Chemical Society and many other scientific associations, the term "milliliter" (abbreviation ml) has been adopted generally for all purposes where the older term "cubic centimeter" (abbreviation cc) was formerly employed. The liter is the unit of volume occupied by a quantity of pure water having a mass of one kilogram at 4 degrees C., and one milliliter is one one-thousandth part of a liter. One cubic centimeter is not exactly one one-thousandth part of a liter since one milliliter equals 1.000027 cubic centimeter.

Although this difference is of no moment in routine procedure, the use of the term "cubic centimeter" will gradually be discontinued, as it is not correct designation for one-thousandth of a

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liter, the standard unit of volume. Do not be surprised when your vaccine bottles give dosage in "milliliter" (ml) in place of "cubic centimeter" will be included for the time being in parenthesis following the designation "milliliter."

—Kentucky Med. Jo.

#### , CARREL-DAKIN SOLUTION

Alex Carrel, of the Rockefeller Institute, and Henry C. Dakin, of the Herter Laboratory, New York City, while working in the laboratories at Compiègne, supported by the Rockefeller Institute for Medical Research and attached to Hospital 21 of the French Army, published the results of their collaboration in 1915. In the *Bulletin de l'Académie de médecine* (74 [3S]: 361-368, 1915), appears an article entitled "Traitement abortif de l'infection des plaies [The abortive treatment of infected wounds]." The author is given as Alexis Carrel, national correspondent of the Academy of Medicine, with the collaboration of Dakin, Dautresne, Dehelly and Dumas. A description of the technic of the use of this solution is given. A translation of their conclusions is as follows:

It is thus possible to sterilize infected wounds and to heal them like aseptic wounds. It would seem that the abortive treatment of infection may considerably hasten the healing of an infected wound and prevent the greater part of those complications which cause death, the am-

putation of extremities and other more or less severe crippling.

Dakin published an article "On the Use of Certain Antiseptic Substances in the Treatment of Infected Wounds" in the *British Medical Journal* (2:318-320, 1915). He gives full directions for preparation of the solution and concludes:

It has been possible to prepare a simple hypochlorite mixture which maintains approximate neutrality under all conditions, is practically non-irritating, and which, when properly applied, has given most encouraging results in the antiseptic treatment of wounds.—*N. E. J. of Med.*

#### HOW TO STAGNATE IN MEDICINE

There are several rules which must be kept in mind, if we wish to deteriorate in medical skill and knowledge.

The first rule: File your patient's records away and forget all about them. Never go over them after the day's work is done and try to pick out errors of omission or commission; never try to follow up patients to learn whether your diagnosis was correct and if your treatment helped the patient. Best of all, keep only a few scribbled lines about each case, preferably without making any attempt at a diagnosis.

The second rule: Read medical books and magazines with an eye only for the "practical"—that which can be used at once. Skip over the physiol-

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RED  
COOLER**

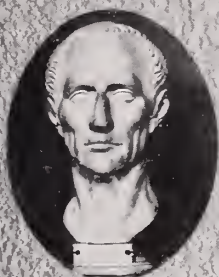
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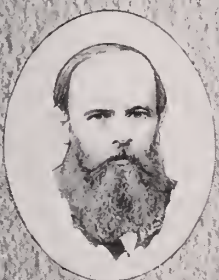
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ogy, pathology, and differential diagnosis, so that you can concentrate on treatment. Read the summaries at the end of articles; only a sucker will dig through the article itself. Best of all, never refer to standard texts, but be content to skim off a few novelties from the medical journals.

The third rule: Never take a chance on confirming your diagnosis by consultation with a specialist (unless, of course, an unreasonable patient insists on it and you can't snub the bounder) or by necropsy. Thus you can cheerfully go ahead making the same mistakes over and over. Most people don't know the difference, anyway.

By following these basic precepts and by avoiding postgraduate courses and medical meetings, you may be assured of a comparatively rapid, and certainly unlaborious, decadence.—*Clin. Med. and Surg.*

## BOOK NOTES

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1939 with the Comments That Have Appeared in The Journal. Cloth. Price, \$1. Pp. 205, with 5 illustrations. Chicago: American Medical Association, 1940.

Only seven of the thirty-five reports listed in this annual collected report are of the familiar "Not Acceptable" or condemnatory type. Two reports announce omission of products from N. N. R., one being off the market. The remainder are con-

cerned with educational and constructive considerations.

The educational reports touch three fields on which lie the front lines of present day therapeutics progress—chemotherapeutics, endocrines and vitamins.

The present annual volume of Council reports is somewhat larger than usual and somewhat above the average issue in interest.

**INTRODUCTION TO MEDICINE:** Don C. Sutton, M.S., M.D., Associate Professor of Medicine, Northwestern University School of Medicine; Attending Physician, Medical Division of the Cook County Hospital; Chief of the Cardiac Clinic, Cook County Hospital, Chicago; Attending Physician, Evanston Hospital. Introduction by Ada Belle McCleery, R. N., Superintendent, Evanston Hospital, Evanston, Ill. Pp. 642 including index. 144 illustrations and 14 color plates. Cloth. \$3.25. St. Louis, The C. V. Mosby Co., 1940.

This is a textbook for use in the schools of nursing. Necessarily it is not detailed. The volume seems to contain the required amount of information that it is desirable to teach nurses. We thoroughly approve the small space accorded to treatment. Nurses have no business attempting to diagnose or treat disease. Some textbooks written for the nurses seem to forget their function which is simply to give the nurse enough information that she may be a better assistant to the physician. The book under discussion seems to be well aware of its sphere.

**SIMPLIFIED DIABETIC MANUAL:** Abraham Rudy, M. D., Associate Physician and Chief of the Diabetic Clinic, Beth Israel Hospital, Boston, Instructor in Medicine, Tufts College

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Medical School, Consultant in Diabetes, Jewish Memorial Hospital, Roxbury, Mass., and Jewish Tuberculosis Sanatorium, Rutland, Mass. Pp. 216 including index. Illustrated. Cloth. \$2.00. New York: M. Barrows & Co. 1940.

The patient with diabetes needs to know a great deal about his disease and how he can live with it. After several chapters devoted to general information concerning diabetes and how it may affect the patient the remainder of the book is devoted to a stimulating discussion of foods, together with many appetizing recipes. Every diabetic patient should possess this volume.

**DISEASES OF THE DIGESTIVE SYSTEM**, by Eugene Rosenthal, M. D., Lecturer in the Medical Faculty, Royal Peter Pazamany University, Budapest, Hungary. Preface by R. J. V. Pulvertaft, M. D., F. R. C. P. Pp. 394 including index. Illustrations 234, including 104 in color, and 16 tables. Cloth. \$8.50. St. Louis: The C. V. Mosby Co. 1940.

A multitude of diagrams help greatly in the understanding of the various types of diseases of the digestive tract. The author wastes little space in theoretical discussion of the notions of various men. Rather, on the basis of rich experience, the author is inclined to be highly explicit in his statements. That, after all, may be a most welcome virtue, as anyone can testify who has pulled down a mass of textbooks from his library in an effort to get definite help when confronted by some puzzling condition in a patient. This is a beautiful book. For both its appearance and content it deserves a place in the balanced library of the physician.

**CANCER IN CHILDHOOD and A Discussion of Certain Benign Tumors**: Harold W. Dargeon, M. D., F. A. A. P., Attending Pediatrician, Memorial Hospital for Cancer and Allied Diseases, New York; Associate Pediatrician, New York Foundling Hospital; Instructor in Pediatrics, College of Physicians and Surgeons, Columbia University. Pp. 114 including index. Illustrated. Cloth. \$3.00. St. Louis: The C. V. Mosby Co. 1940.

Most of the textbooks on cancer have concerned themselves with cancer in general. It was high time that a study of this disease in childhood should make its appearance. This book may well mark the beginning of research in the peculiar problems of neoplastic disease in babies and children. Cancer has usually been thought of as being a disease of middle age or beyond. All of us need to know more about its occurrence and behavior early in life.

Numerous authors have contributed to this book. There are many complete case studies, with splendid illustrations. The book concerns a topic which no physician can conscientiously neglect to know thoroughly.

**NEW AND NONOFFICIAL REMEDIES**, 1940, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1940. Cloth. Price, postpaid, \$1.50. Pp. 656-LXVIII. Chicago: American Medical Association, 1940.

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**GYNECOLOGICAL AND OBSTETRICAL PATHOLOGY:** Emil Novak, A. B., M. D., D. Sc. (Hon. Dublin) F. A. C. S.: Associate in Gynecology, The Johns Hopkins Medical School; Gynecologist, Bon Secours and St. Agnes Hospitals, Baltimore; Fellow American Gynecological Society; American Association of Obstetricians, Gynecologists and Abdominal Surgeons and Southern Surgical Association; Honorary Fellow, Royal Institute of Medicine, Budapest; Sociedad d'Obstetricia et Ginecologia de Buenos Aires; Central Association of Obstetricians and Gynecologists; Texas State Association of Obstetricians and Gynecologists; Past Chairman, Section of Gynecology and Obstetrics, American Medical Association. Pp. 496 with index. 427 illustrations. Cloth. Philadelphia: W. B. Saunders Co. 1940.

This book is splendidly illustrated with both drawings and photographs of gross and microscopic sections. In many instances pathology is related to the embryological development of the tissue concerned. Stress is laid on the differentiation of neoplastic diseases and the inflammatory diseases. This is not a large book, but the various sections are so well subdivided that desired information is very readily obtained by the reader.

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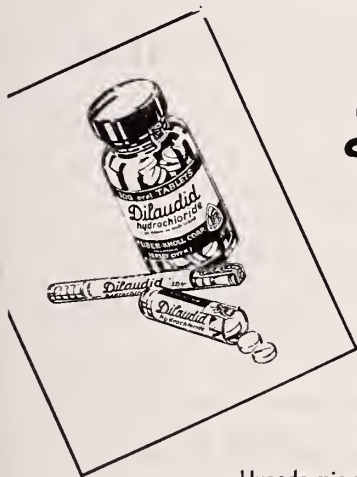
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Photograph courtesy of C. P. Rhoads, M. D., Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City.

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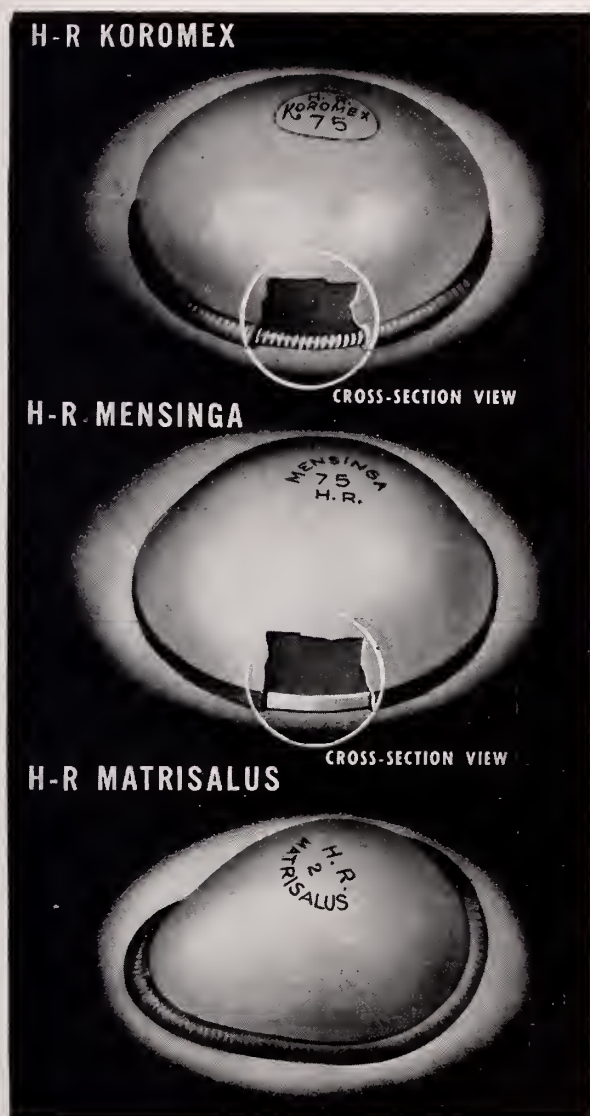


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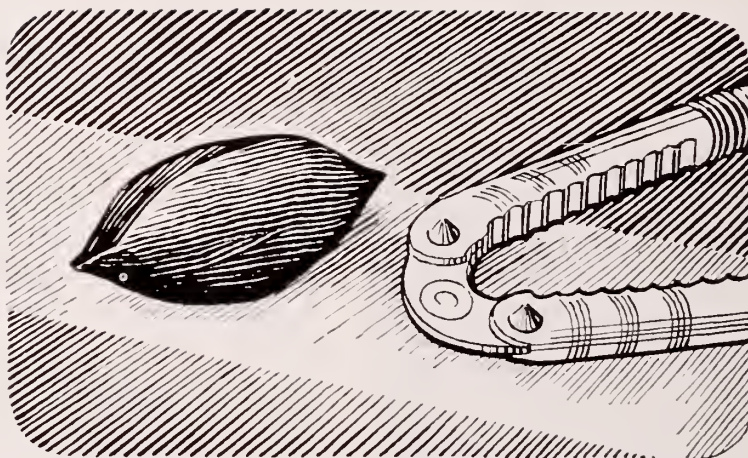
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## Cancer of the Small and of the Large Intestines

J. SHELTON HORSLEY, M. D.

*Richmond, Virginia*

CANCER of the small bowel is not common, but there are an increasing number of cases being reported, and with a careful clinical examination and radiologic study the diagnosis can be made more accurately. In an excellent monograph by Chester M. Jones (Jones, C. M. *Digestive Tract Pain*, New York, Macmillan Co., 1938), the location of pain has been studied and the reference from the gastro-intestinal tract to certain areas on the skin has been fairly accurately mapped out.

There are four types of malignancy of the small intestine, three of cancer and one of sarcoma. There occurs occasionally a myoma of the small intestines which histologically may be benign but which frequently causes severe hemorrhages and clinically in this respect it may be malignant, as not infrequently the hemorrhages may be so marked and frequent as to cause death. O. N. Smith has collected a series of 109 myomas of the small intestines from the literature and he has found that three deaths have occurred in this series of cases from intestinal obstruction and in 22 there were severe hemorrhages. Only 6 of these 22 patients were saved by surgical intervention. In 15 other cases not included in Smith's article prominent symptoms were hemorrhage in 10, headache in 5, perforation with general peritonitis in 3, and intussusception in 1. This tumor, then, may be well considered malignant from a clinical standpoint. The hemorrhage may frequently form a hollow mass of the myoma, which may perforate and cause death.

Cancers of the jejunum most frequently occur in the upper part of the jejunum just below the ligament of Treitz. They are of the usual adenocarcinomatous structure, but frequently tend to contract and cause obstruction as cancers in the left colon do. They are often ulcerative.

Patients in the fifth and sixth decades are most subject to carcinoma of the small bowel, and it occurs more frequently in males than in females, which agrees with the figures of carcinoma in other portions of the gastro-intestinal tract. The cancer may be of the stenosing type, infiltrating and ulcerating, polypoid, or the fungous type. Adenocarcinoma of the usual structure is the most com-

mon, but the scirrhus or colloid type is occasionally, though rarely, found.

In the lower portion of the small intestine there is more of a tendency for the carcinoma to assume the scirrhus or napkin-ring type than when the carcinoma is higher up, though there are many exceptions to this rule.

Carcinoma of the duodenum has metastases in only about 20 to 30 per cent of the cases, and in the lower small intestine metastasis is usually earlier and more distant. In the upper jejunum, however, the metastasis occupies the midline between these two extremes.

In the duodenum cancer may be of the polypoid type and not infrequently arises from the ampulla of Vater so that it is difficult to say whether it is an actual tumor of the duodenum or of the end of the bile duct. Cases have been reported in which a supposedly malignant tumor was found to be an adenomyosis of the pyloric muscle with ectopic Brunner's glands. Maitland-Jones reports such a case in a girl ten years of age. Grossly the neoplasm resembled cancer, but microscopically it showed the general structure of Brunner's glands and did not appear to be malignant. The symptoms of cancer of the duodenum depend largely upon the point of origin. If it involves the tissues around the ampulla of Vater, jaundice is one of the earliest symptoms. A marked loss of weight and strength is a rather striking symptom of cancer of the duodenum. The onset of pain is marked, being dull or acute with epigastric colic. There is almost always occult blood in the stool which would serve to differentiate this tumor from common duct stone. The pain is rather periodic in character, aggravated by food, but relieved by vomiting and not relieved by alkalies. When the tumor is marked symptoms of obstruction with vomiting and pain may occur. The jaundice in duodenal carcinoma is usually progressive, but tends to be remittent, probably due to ulceration and sloughing away of some of the obstructing tissue in the ampullary region and to transitory relief of the local edema and pressure.

With the papillary fungating type which occurs not infrequently in the duodenum, which is part of the foregut, the growth may be so large as to block the duodenum. There is then constant vomiting of very copious material. Constipation is the

rule because of inanition as well as intestinal obstruction, and fever occurs in jaundiced cases occasionally with chills and sweats. There may be suppurative cholangitis if the infection travels up the ducts. Naturally, if the growth produces obstruction between the ampulla and the pylorus, the vomited material does not contain bile. Around the ampulla there is marked jaundice, and in the distal part of the duodenum there may be no jaundice but the vomitus contains bile and pancreatic juice. A palpable mass may be noticed in the epigastrium, though this is usually in the late stages. In about half of the cases reported of cancer of the duodenum it has been noted that the mass is usually firm and fixed, and may be tender with muscle spasm. The stomach may be dilated, but there is no distention of the lower bowel. Ascites is occasionally present in the terminal stages, and the characteristic gastro-duodenal succussion splash may be found in obstruction of the lower duodenum and particularly when there is obstruction at the ligament of Treitz.

In cancer just below the pylorus, the clinical picture of duodenal ulcer may be simulated, with hunger pains, relieved by food, and frequently symptoms of hemorrhage. In this group of cases the lesion can often be visualized with x-ray examination, but when the growth is farther down in the duodenum it is not so well brought out by x-ray examination.

Occasionally cancer of the duodenum is supposed to arise from a duodenal ulcer, but with the very great rarity of cancer in this region and the common occurrence of duodenal ulcer, it would seem that the association is more casual than causative.

With obstruction high in the small intestine, or in the upper jejunum, the pylorus becomes afunctional and dilated, so that this landmark is lost and it makes the demonstration of a filling defect or the location of the growth more difficult. Even when the filling defect is demonstrated in the mid-duodenum it is occasionally mistaken for an extrinsic tumor, particularly of the pancreas.

The symptoms of cancer of the jejunum and of the ileum depend almost entirely upon obstruction or bleeding. The obstruction is usually directly from the tumor, but may be caused by the kinking or sometimes by intussusception produced by the malignant growths. One of the first signs of cancer in the small bowel may be a slowly developing anemia, such as occurs in cancer of the right colon. This may resemble pernicious anemia, but it does not respond to the therapeutic test of the administration of liver products. Unexplained secondary anemia should require a thorough study of the gastro-intestinal tract, and particularly of the small bowel and the right colon.

Obstruction high in the jejunum and the duodenum produces no abdominal distention, and certainly none in the lower abdomen, but vomiting will be quite constant, and will frequently show a marked peristalsis or a reversed peristalsis.

When the patient presents himself for examination he is usually so thin that a tumor may be depalpated.

Carcinoma of the upper jejunum just below the ligament of Treitz is sometimes difficult of access. In a patient of mine, Mr. H. K. W., male, age 59 years, there was a complaint of indigestion for six months before admission, at first as a sense of fullness, and later becoming more pronounced, being worse about an hour after meals. The patient lost about 16 pounds in weight. For three weeks before admission there had been nausea and vomiting, but no bleeding. There was no actual pain. X-ray showed obstruction apparently just below the ligament of Treitz, and a diagnosis of cancer of the upper jejunum was made partly from the history of the case and partly from the x-ray examination. Operation was done April 12, 1939. The tumor was somewhat adherent. The dissection was made largely with the electric cautery, and after resection an end-to-end union by suture was made with some difficulty. A rubber tube was temporarily sutured into the anastomosis so the tissues could be folded in satisfactorily. He made a satisfactory recovery, and when last heard from was in excellent condition.

Another interesting case was that reported by George R. Moffitt, of Harrisburg, Pa. The patient was a woman 53 years of age. The pain came on after eating, and was especially marked after eating fried foods. There was a feeling of a lump in the abdomen during the attacks of pain. No mass was palpated. X-ray examination showed obstruction of the jejunum. A segment of the jejunum was resected, and an end-to-end union was made. The patient made a satisfactory recovery. The growth was a malignant type of adenocarcinoma; this was in the upper part of the jejunum, well below the ligament of Treitz.

#### CARCINOID TUMORS

An extremely interesting type of cancer is carcinoid. This was first recognized as a tumor of the appendix and was called at first cancer of the appendix, appearing as an orange yellow tumor near the tip of the appendix. In 1914 Gosset and Masson demonstrated cells about the appendix and at the small bowel that they called argentaffin cells because they contained granules which would reduce silver compound. These cells are distributed throughout the intestinal tract of man and many of the higher vertebrates, but are most frequently found about the cecum and the appendix. The function of these cells has not been determined, and their exact origin is thought by Raiford probably to be from the ectoderm. They are very similar to cells of the adrenal gland both in color and form. They are sometimes arranged in rosettes which would also seem to link them to neuroblastoma. The function of these cells is unknown. They are supposed to secrete some endocrine-like substance called "neucocrine", but this has not been demonstrated. They are also thought to secrete something similar to cells of the adrenal



medulla. Masson believes that these cells migrate to the nerves of the submucous plexus and proliferate, but Raiford thinks they produce a perineural and not an intraneural growth which seems to signify a secondary arrangement along the nerve sheath. According to Raiford, carcinoids apparently arise from normal argentaffin cells without the necessity of the intermediary process of neuro-mata. These tumors are usually benign, but many instances have been reported in which they become malignant and metastasize into the liver or into the mesentery. A few cases have been found in which metastases were in the lungs and pleura. In 25 carcinoids of the gastro-intestinal tract collected by Raiford at Johns Hopkins Hospital, 9 were in the small intestine, 17 were in the appendix, and 2 were in the large bowel and 1 in the stomach. It would be seen, then, that the incidence of these tumors is more frequently around the distribution of the argentaffin cells which are chiefly in the appendix, the cecum and the lower portion of the small intestine.

In a carefully done necropsy these tumors are frequently found in the small intestine. They may be overlooked unless great care is taken to demonstrate them.

Dr. Louisa E. Keasbey, the pathologist of the Lancaster General Hospital, Lancaster, Pa., has been able to find them in a large proportion of necropsies done in middle aged or old men.

Another unusual feature about carcinoids is that histologically the malignant type is apparently exactly like the benign type, so that microscopic examination cannot differentiate between the benign and the malignant tumors. There are a good many malignant carcinoids, but doubtless they form only a small proportion of the total incidence of carcinoids, a great majority of which are benign.

#### MELANOMA

An extremely unusual type of cancer of the small bowel is the melanoma. Until a few years ago a primary melanoma of the small intestines was unknown, though instances of metastatic melanomas of the small bowel can be found. Frank R. Menne and J. A. P. Beeman reported a case of what appears to be a primary melanoma of the small intestine. They give seven authors by whom authenticated instances of primary melanoma of the small intestine have been reported: Trevis, quoted by Libman; Vander Veer; Kellert; Cox and Sloane; Peritz; and Lund.

A rare case of secondary melanoma of the small intestine was reported by S. W. Budd and H. C. Jones. The patient was a woman, 31 years of age, who had a large mole on her back and a small mole on the left arm, treated with radium and the electric needle. The moles disappeared but the pigmented scars remained. A little over two years after this the patient had symptoms of obstruction and was operated upon by Dr. Jones, who found an intussusception involving the head of the cecum. The mass of intestine was removed and a peduncu-

lated tumor about 18 inches above the ileo-cecal valve was found. It was soft and freely movable, and on the peritoneal surface there was a slight dimpling. The tumor was about the size of a bantam egg. The patient recovered satisfactorily, but a few months later had similar symptoms and was again operated upon. The melanoma was found 12 inches above the ileo-cecal valve. Examination of the ileum showed ten or more small growths, the largest one about 3 inches above the ileo-cecal valve. There seemed to be no involvement of the mesentery or the liver, nor any recurrence in the scar of the previous operation. The patient died a few months after the last operation. The tumors removed at both operations were black, soft and friable. Microscopic examination showed that they sprang from the submucosa and pushed the mucosa into the lumen. The mucosa was thin and ulcerated. It did not involve the muscular coats. The cells were heavily pigmented and were arranged in groups. The growths were melanomata of the small intestine apparently secondary to the malignant moles of the skin.

The method of metastasis in this case is interesting. It would seem probable that the metastases occurred from individual cells which necessarily must pass through the lungs and were not large enough to cause pulmonary emboli. The mucosa of the small intestine seems to have a certain attraction for these cells.

#### SARCOMA

Sarcoma of the small bowel is far more usual than carcinoma of the small bowel, and is found more frequently in the small than in the large bowel. They may be lymphosarcoma, or lymphosarcomatoma. The latter is more common, and is found more frequently in the lower small bowel, probably because of the abundant lymphatic tissue, as Peyer's patches. It develops from the lymph nodes. This lymphosarcoma or lymphoblastoma may be found not infrequently in children. It does not metastasize as readily as spindle-cell sarcoma or carcinoma, but when they do metastasize they usually go to adjacent lymph nodes and follow no set course beyond that. The clinical diagnosis is difficult to make. Frequently these tumors are found when operating for a supposed peptic ulcer or a diseased appendix.

Usually the first symptom is a discovery of a mass or the growth in the abdomen, and the location of the pain, according to Chester Jones, may form some clue as to the site of the tumor, the location being frequently around the umbilicus. Fever often occurs even when there is no ulceration, and secondary anemia is common. The younger the individual the greater the chances of sarcoma, and a rapidly growing intestinal tumor in a child, together with cachexia and loss of weight and strength, may be presumptive evidence of sarcoma, particularly if the growth can be located in the small bowel.

If an early operation is done, recovery may be expected.

## CANCER OF THE LARGE BOWEL

During 1936 the deaths in the United States from cancer of the gastro-intestinal tract, including the anus, liver and pancreas, were 68,239. Of these, 15,364 deaths were caused by cancer of the intestines and another 7,325 by cancer of the rectum and anus. These figures must serve to impress upon us the seriousness of the cancer problem and to emphasize the necessity of reducing the death rate from this scourge. As in cancer of the stomach, however, the only treatment for cancer of the large bowel is surgical excision. To be sure, in the anus and rectum irradiation either by radium or x-ray is often helpful and in a few cases is apparently curative. However, some radiologists, such as Max Cutler, believe that the treatment of cancer of the rectum and anus should be primarily surgical and irradiation should be reserved for inoperable cases or as an adjuvant to surgery. In some instances radon implants in cancer of the lower rectum in connection with x-ray treatment and followed later by excision, unless the growth seems to improve very promptly, might be indicated. Above the lower rectum, in the terminal sigmoid and in the colon, excision is the only reliable treatment.

As for the diagnosis, it is important that every patient with secondary anemia, with indigestion, with irregularity of the bowel habits, or symptoms of obstruction or of passage of blood, mucus or pus from the bowel should be investigated carefully. Cancer of the lower rectum can be diagnosed in a large percentage of cases by digital examination with a glove; by using a glove at least a half-inch more of the rectum can be explored than by using a finger cot. A proctoscopic examination is also essential and will reveal growths in the terminal sigmoid. A large percentage of malignant growths in the large bowel spring from polyps or apparently benign tumors, or from old chronic ulceration. This has been verified by proctologists who have actually observed polyps that are apparently benign and later undergo malignant degeneration. Not infrequently, too, the growth that appears to be benign will show distinctly cancerous tissue in some portion.

The symptoms of cancer of the right colon are often different from the symptoms of cancer of the left colon. In the right side the absorption of fluid is rapid, whereas in the left colon the function is chiefly that of a reservoir. A fungating mass which is necrotic and produces readily absorbable toxic products in the right colon will often cause an anemia difficult to distinguish from a pernicious anemia. In any anemia whose cause is not obvious the gastro-intestinal tract should be well examined. Slow bleeding from a peptic ulcer or from a polyp in the stomach or duodenum, or an ulcer or cancer in the right colon, has been so frequently found among the causes of anemia that lesions in these regions should never be overlooked when pronounced anemia occurs, particu-

larly in an individual over thirty-five years of age.

In the left side of the bowel frequently obstruction from the usual cancerous stenosis is the first symptom, but before that is evident the patient may often complain of an excessive amount of gas, a rumbling, and some tympanitis and distention. I have seen cases of the "napkin-ring" type of obstruction on the right side, and a papillomatous type of carcinoma that bleeds freely and is soft may be found in the left colon. These occurrences, however, are not sufficiently frequent to make them the rule instead of the exception. It is doubtless more common to find a fungous or ulcerative type of carcinoma in the left colon than a "napkin-ring" cancer in the right, so that no rule of thumb is satisfactory in these cases.

When a lesion of the large bowel is suspected and the rectum and lower sigmoid have been shown by digital and proctoscopic examinations to be free from cancer, a careful x-ray examination should be made. Such examinations should be made by a roentgenologist who is trained in gastro-intestinal work. Not infrequently we may be able to secure a satisfactory demonstration of foreign bodies or fractures from a roentgenologist who has not had sufficient training in gastro-intestinal diagnosis to make his opinion in this latter field reliable. The roentgenologic diagnosis of the terminal sigmoid is particularly difficult because of the loops of bowel that overlap this region and may make a filling defect here inconspicuous. In suspected lesions of the large bowel when obstruction may be impending, a barium enema should be the first method of x-ray examination. If no obstruction occurs, then the gastro-intestinal x-ray from the stomach may be utilized.

## DISCUSSION AND COMMENT

To sum up the situation, we may say that any patient, particularly a man, with an unexplained anemia or a change of his bowel habits from being regular to occasional constipation, and this frequently succeeded by a slight diarrhea, or by straining at stool with unproductive bowel movements and the passage of merely a little mucus and pus, should immediately be considered a suspect for a malignant lesion in the large bowel. Naturally the ordinary colitis or an ulcerative colitis should be differentiated, but it must be recalled that many cases of cancer follow ulcerations of the colon, and the fact that the patient may have suffered from this condition for some time should not blind us to the possibility of malignancy. Of course, when the ulcer is large or the necrosis extensive, local peritonitis and tenderness and often a palpable mass in this region will occur. This does not necessarily mean, however, that the cancer itself has involved the peritoneal coat, but that the inflammation has caused peritonitis and pain.

In suspected lesions of the colon if there is any indication of obstruction there should be no barium meal given by the stomach, because it may increase the tendency to obstruction, but roentgen-



ologic observation of a barium enema should be relied upon.

As for the treatment, with the exception of cancer in the lower rectum or anus where irradiation in the form of radium implants or x-ray may be helpful or occasionally curative, the generally accepted treatment is excision of the growth. Even in the lower rectum and anus, surgical excision with the electric cautery preceded often by some form of irradiation gives the best chance of cure.

The operative treatment must be adapted to the physiologic function of the colon, which varies from one side to the other, as has already been indicated, and also to the nature of the lesion and the condition of the patient. These patients are usually in middle or old age, and as a rule they have been suffering from the disease for many months and sometimes for several years. They are often poor surgical risks, with impaired kidneys, disturbed nutrition, and not infrequently with cardiovascular disease.

All of these angles must be considered, and it is better to be over-cautious in the preliminary preparation in order that a more radical operation may be done if found necessary, than to have the patient in such a condition that when the operation appears to be much more dangerous than had been anticipated there is but little background of resistance. If the growth is on the right side, preparation for a few days with salt solution enemas and with a low residue diet, an abundance of fluids, fruit juices, carbohydrates, especially candy, is advisable. It is unwise, however, to limit the diet too strictly, because what is gained by decreasing the residue in the large bowel may be more than offset by failing to maintain the patient's nutrition by a well-balanced diet. The patient should have an abundance of fluids, preferably by mouth, but reinforced if necessary by intravenous injections of 5 per cent dextrose in Ringer's solution. Intravenous fluids should be given cautiously because these patients frequently have some cardiovascular disease and an additional sudden strain in the volume of the blood may be serious. It would be best to give intravenous fluids slowly, at a rate of not more than 100 c.c. an hour for about ten or fifteen hours at a time. If this tends to elevate the blood pressure materially it should be abandoned, and resort had to hypodermoclysis, assuming, of course, that the patient is not absorbing a sufficient amount of fluid by mouth. It must be recalled that in lesions of the right colon which we are now considering, the portion of the bowel whose chief function is absorption of fluids is partly out of commission and must often be reinforced by parenteral methods. Occasionally a transfusion of blood may be indicated, though, unless the hemoglobin is below 60 per cent, it would be better to reserve transfusion of blood until after the operation, when the patient may have mild shock and when the condition of the dilated blood vessels is such that they will take up the additional fluid without the strain that would occur before

operation. At any rate, a donor should always be matched and in readiness for use after the operation.

The question of anesthesia is one to be seriously considered. In operation upon the right colon spinal anesthesia may be used, though the anesthesia zone must extend up to the costal margin in order to be effective. Not infrequently this is a dangerous procedure in these patients, and the combination of local anesthetic and ethylene gas is often satisfactory. If the patient is given a hypodermic injection of a combination of morphine, hyoscin and cactin, what is known as a No. 1 tablet, the operation may often be done with a local anesthetic.

In cancer of the right colon it may be difficult to decide before opening the abdomen whether the operation should be completed in one stage or in two stages. It would be best to make the incision along the inner portion of the right rectus muscle, having it as long as necessary to produce full exposure. If the growth in the colon is large and if the mesentery is short, a two-stage procedure is preferable. Coprostasis is provided by small rubber bands passed through the mesentery of the bowel several inches distant from the proposed point of incision in the bowel. The ileum is divided about 8 or 10 inches from its termination with the electric cautery between two clamps, and both ends are thoroughly seared. The lower end is closed with inverting sutures. The upper end is brought to the under surface of the transverse colon near the midline, after lifting up the omentum. A pouch of the transverse colon just beneath the omentum is caught by two forceps about  $\frac{1}{2}$  inch apart, drawn out strongly, and the base of the pouch is clamped with a Kelly pedicle forceps. The pouch is cut away with the electric cautery, thoroughly charring the bowel in the grasp of the pedicle forceps. A running basting stitch of silk or linen is placed between the under side of the stump of the ileum and the colon just below the clamp. A similar suture is placed between the upper surface of the stump of the ileum and the colon just above the pedicle clamp. These sutures are drawn taut while the clamps on both the ileum and the colon are removed. The ends of the sutures on each side are tied together. This line of sutures is reinforced by a series of mattress sutures of fine chromic catgut whose long ends are passed through the adjacent omentum for additional safety. About ten days or two weeks later the cecum and right colon are dissected free and the transverse colon near the anastomosis is divided with the cautery between two forceps and the end inverted.

In such cases it is impossible to reduce the bacterial contents of the bowel by making an enterostomy, and this type of so-called aseptic anastomosis gives the best results.

If the mesentery of the ascending colon is long and the growth is not extensive, the right colon

can be excised at the same time that the ileo-colonic anastomosis is made.

Cancer of the transverse or left colon and down into the upper portion of the rectum should always be removed in three stages. This has been described before, the first stage being a cecostomy on the right side through a muscle-splitting incision, bringing up the cecum and ascending colon onto the abdominal wall and usually removing the appendix. A glass rod is placed beneath the ascending colon just above the ileo-cecal valve, the bowel is packed off with dry gauze, and a catheter is inserted. The cecum is opened after one or two days.

No effort is made to explore the abdomen at first. Three days after the enterostomy is done the colon is irrigated with an abundant amount of warm salt solution twice a day, both from the enterostomy wound and from the rectum. This makes a minimum time between the enterostomy and the resection about ten days or two weeks. Often the patient has a diarrhea for a while, and it may be wise to stretch this period between colostomy and resection over a longer period.

The resection should preferably be done with an end-to-end union, somewhat as in the small bowel, because the bacterial flora have been reduced by the colostomy and the irregular surfaces of the colon can be united from within far more accurately than by the blinder so-called aseptic method. Over the inner row of continuous silk or linen sutures, an external row of interrupted mattress sutures of fine chromic catgut is placed and the ends are passed through adjacent peritoneal covered fat. If the tumor is large or if the patient is very fat, a modified Mikulicz operation is advisable, preparing the bowel as though an end-to-end union were to be made, clamping, dividing and tying the mesentery in sections and bringing the whole affected loop up onto the abdominal wall. The two limbs of the affected loop are sutured together, and frequently drainage may be placed down to the stumps of the mesentery. Each end of the loop is doubly clamped and divided with the electric cautery. The drainage is removed in two or three days, but as there is already a colostomy there is no occasion for removing the clamps from the ends of the bowel until they drop off. Then the spur is crushed as usual.

In the lower sigmoid or upper rectum an end-to-end union can often be made, whereas formerly a permanent artificial anus was established. In this union, after resecting the lower sigmoid and upper rectum, two guy sutures are placed through the posterior border of each stump and are tied down as the stumps are approximated. Then the posterior portions of each stump are sutured together, the suture is carried anteriorly, and this row is covered with mattress sutures.

Lower down in the rectum a complete excision must be done, establishing a permanent artificial anus. Here spinal anesthesia affords more relaxation and is preferable. By giving continuous intravenous dextrose in Ringer's solution, and by having a donor ready, the excision of the rectum can be completed in one stage, first severing the lower sigmoid and bringing the upper stump out through a stab wound on the left side, closing the lower stump and shoving it down, suturing the peritoneum over it, and closing the abdominal wound. Then with the patient in the lateral or dorsal position, the lower rectum is excised from below.

Often in these operations the use of the cautery is helpful. If the bowel is fairly well fixed to the side of the abdomen, as in the middle sigmoid, a division of the adhesions with the hot electric cautery may convert what seems to be an inoperable condition into one in which the bowel can be resected. This is particularly true around the splenic flexure.

We place Steinberg's coli-bactragen into the peritoneal cavity at the completion of the operation, to prevent peritonitis.

### CONCLUSIONS

The great desideratum in cancer of the large bowel is to make an early diagnosis and do an early resection; but when the cancer is advanced, a condition that appears to be inoperable may, by measures which have been described, be converted into one that is operable, giving relief and occasionally cure. It is better to apply radical measures to an early cancer of the bowel, with the greater assurance of cure, than to attempt a too limited removal which may give a somewhat less immediate operative mortality but a larger percentage of recurrences.

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## Necessity for Accuracy and Simplification in the Diagnosis of Renal Tuberculosis

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FEW subjects in medicine are in such a state of confusion as the subject of diagnosis and treatment in renal tuberculosis. This confusion exists in spite of the fact that the disease has been well

known for many years. Moreover, the teaching of the subject of renal tuberculosis in medical schools is far from standardized. One instructor may teach his students to attempt to catheterize both kidneys and make bilateral pyelograms in every case in which it is suspected that renal tuberculosis is pres-

\* Read before the meeting of the New Mexico Medical Society, Albuquerque, New Mexico, May 27 to 29, 1940.



ent, whereas another teacher may warn against ureteral catheterization of the uninvolved kidney for fear of infecting it with tuberculosis. Also, textbooks of urology do not agree upon these points, so that the average medical student at graduation finds himself in a quandary, unable to employ logical reasoning, and forced to follow blindly the dogmas of his instructor. The introduction of excretory urography in recent years has not helped to clarify the subject. As a matter of fact, certain physicians are now advocating diagnosis by means of excretory urography alone. Although these physicians are to be commended in their efforts to reduce instrumentation to a minimum for patients suffering from renal tuberculosis, it may be questioned whether diagnosis by this method is sufficiently accurate to allow proper decision as to treatment.

At the outset of such a discussion it must be remembered that the clinical use of the term "unilateral renal tuberculosis" is inaccurate. There are only four methods of investigating a kidney in the presence of tuberculous disease and it is well known that they may all give negative results, even though tuberculosis is present. These methods are: (1) urography (either descending or retrograde), (2) determination of the number of pus corpuscles in a "wet smear" of urine obtained by ureteral catheterization, (3) microscopic examination of a stained specimen of ureteral urine for acid-fast bacilli and (4) inoculation of guinea-pigs with the specimen of urine obtained by ureteral catheterization. All these examinations except descending urography require cystoscopic examination. To make all of these examinations may at times require more

than one cystoscopic procedure. The question logically may be asked, Why not perform all these procedures for every patient suspected of having renal tuberculosis, thereby automatically standardizing diagnosis? In answer to this question several factors must be taken into consideration. First, cystoscopy carried out in the presence of urinary tuberculosis is usually a very painful procedure unless anesthesia is employed. Repeated cystoscopic examinations are not only painful to the patient but they also tend to traumatize infected tissue, an occurrence which is not to be desired in any type of disease. Repeated administration of anesthetic agents likewise is to be avoided if it is unnecessary. An axiom in diagnosis in the presence of any disease is that only those examinations should be employed which are sufficient to enable the physician to arrive at a sound diagnosis. Fewer procedures than these are not enough; more than these are not in the interest of the patient, either physically or economically. The ultimate in diagnosis in renal tuberculosis, therefore, is the minimal amount of investigation that will permit a diagnosis sufficiently accurate to enable the physician to advise correct treatment. It will be the purpose of this paper to determine what constitutes this type of diagnosis. For the sake of brevity I shall henceforth speak of the involved kidney as the "bad" kidney and the uninvolved, or least involved kidney, as the "good" kidney.

There is not sufficient evidence to support the belief that ureteral catheterization if properly done will infect the "good" kidney. On the other hand, it seems rather probable that retrograde pyelogra-

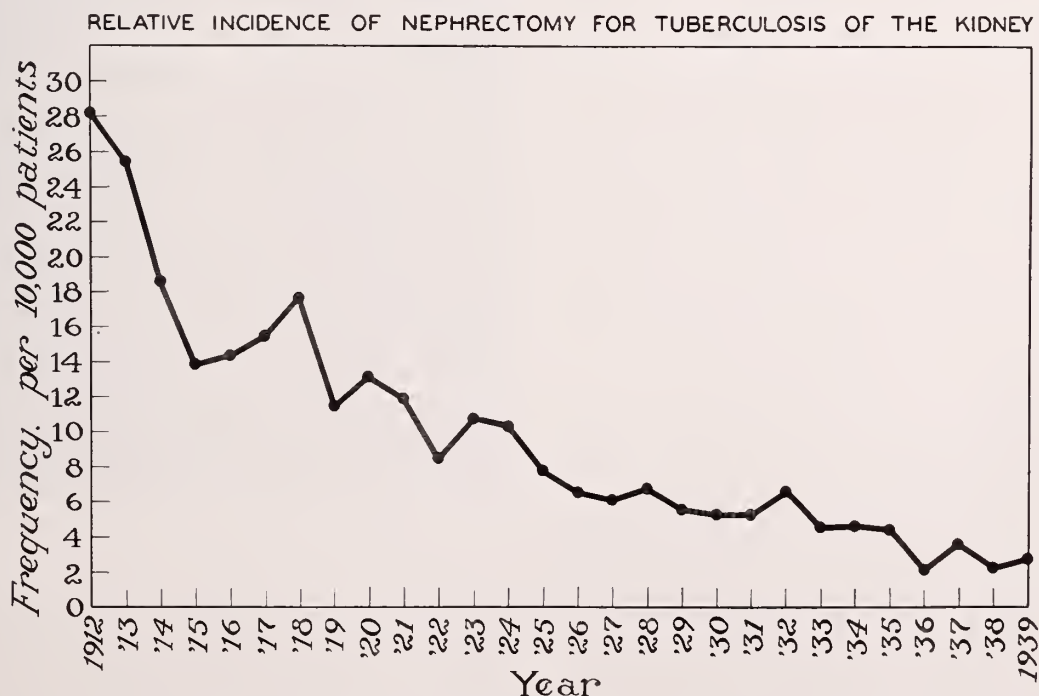


Fig. 1. Comparative incidence of nephrectomy for renal tuberculosis at The Mayo Clinic during the years 1912 to 1939, inclusive.

phy, when performed in a kidney grossly infected with tuberculosis, carries with it a definite risk. The danger involved is one of disseminating the infection as miliary tuberculosis or as tuberculous meningitis. This danger has been distinctly minimized since physicians began to use organic iodide preparations (similar to those employed in excretory urography) for retrograde pyelographic media instead of sodium iodide. It seems reasonable to assume that in many of the cases reported in the literature in which patients died from tuberculous meningitis following nephrectomy for renal tuberculosis, death was the result of the making of pre-operative retrograde pyelograms rather than of trauma incident to operation.

From what has been said it is apparent that simplification and clarification of diagnosis in renal tuberculosis are to be desired. It would seem that one method of accomplishing this would be to study the present diagnostic trend and to evaluate, if possible, the relative nearness to accuracy of the various methods of diagnosis. To accomplish this, records of 216 patients suffering from renal tuberculosis seen at the Mayo Clinic during the past five years have been studied. The first 100 cases were consecutive and have been reported elsewhere by Braasch and me. The remaining 116 cases are almost consecutive, but those in which nephrectomy had been previously performed were eliminated so that the cases might more truly represent the problem of diagnosis which exists when the patient first consults his physician. As a preliminary to this study, I compared the number of times nephrectomy for tuberculosis had been done at the Mayo Clinic from 1912 through 1939 with the total registration at the clinic for each year. The information thus obtained has been given graphic form (fig. 1), and demonstrates the apparent dramatic decrease in the incidence of renal tuberculosis in recent years. Conclusions to be formed on the basis of this chart compare favorably with the conclusion that a reduction in incidence of tuberculosis elsewhere in the body has occurred, a reduction which is evidently the result of improved living conditions, better sanitary conditions, and constant supervision of the food and milk supply of the nation by the various departments of public health and similar agencies.

#### CASE STUDIES

A study of the present group of 216 cases of renal tuberculosis in which the patients were seen at the clinic within the past five years revealed some interesting data. It was found that in 71 per cent of these cases the *Mycobacterium tuberculosis* could be demonstrated in the voided specimen of urine by the Ziehl-Neelsen method of staining. This suggests that in approximately three-fourths of all instances of renal tuberculosis the diagnosis can be made on the basis of the history, physical examination and special staining of the vesical urine. The problem in the average case therefore, is not one of determining whether or not renal

tuberculosis is present but rather, one of determining the degree of involvement of each kidney. Cystoscopy was performed in 87 per cent, and excretory urography in 90 per cent, of these cases. Ureteral catheterization to obtain separate specimens of urine from the kidneys for examination was carried out in 76.3 per cent of cases. The "good" kidney was catheterized in 67.4 per cent of cases, and the "bad" kidney in 46.7 per cent. Retrograde pyelograms were made in 26 per cent of cases. In 11 per cent of cases pyelograms were made in the "good" kidney. In 19 per cent they were made in the "bad" kidney. Concerning the use of excretory urography as the only means of examination in such cases, I found that we had employed it to the exclusion of all other diagnostic tests in only 12.8 per cent of cases. In the majority of these cases, the patients were those in whom grossly bilateral renal tuberculosis could be diagnosed by means of descending urography alone. The figures just mentioned suggest that the trend in diagnosis is distinctly away from retrograde pyelography and toward excretory urography.

If the situation is closely analyzed, definite reasons are apparent for this diagnostic trend. The so-called bad kidney should be considered first. Detail in urographic visualization of the "bad"



Fig. 2. Excretory urogram, revealing tuberculous changes of the left kidney.

kidney is not so important, and this is especially true if the diagnosis of renal tuberculosis has been made on the basis of preliminary examination of the vesical urine, as in such a case the excretory urogram will usually point out the "bad" kidney with remarkable accuracy. Even though the pel-



vis and calices are not completely outlined, the delayed visualization or incomplete outline of dilated or deformed calices and pelvis will usually be sufficient for diagnosis (fig. 2). In considering the interpretation of excretory urograms in the presence of renal tuberculosis, it is necessary for the physician to modify his conceptions of urographic interpretations that were obtained from a study of retrograde pyelograms. For instance, all textbooks on urology speak of the irregular "moth-eaten" appearance of the renal calices indicative of cortical necrosis as the most common observation in this disease. Although such a deformity is pathognomonic of tuberculosis, it is by no means the most common observation. In an effort to determine the characteristics of the excretory urogram when renal tuberculosis is present, the excretory urograms of ninety-five "bad" kidneys in this series were studied. The urographic observations listed in order of frequency of occurrence were found to be as follows: (1) absence of visualization (35 per cent), (2) delay in visualization (25 per cent), (3) caliectasis, (4) evidence of necrosis ("moth-eaten" appearance of calices), (5) cicatricial deformity of calices with isolation of tips of calices, (6) deformity and dilatation of the ureter, and (7) pyelectasis. It is apparent on the basis of these data that when tuberculosis of the urinary tract is known to be present, it is not necessary to demonstrate areas of cortical necrosis to enable the physician to know which kidney is involved. Figure 2 demonstrates this point well. Although visualization of the left kidney is incomplete, still, enough of the dilated calices may be seen to permit making of the diagnosis of tuberculosis of the left kidney. In such a case completely to fill and distend the pelvis and calices of such a kidney with media by the retrograde method to visualize every detail certainly should be considered an unnecessary diagnostic procedure. Nothing could be gained by such a procedure that would affect the physician's decision as to the type of treatment to be undertaken.

The "good" kidney presents a totally different problem. In such a circumstance detail in visualization is much more important than it would be in the case of a "bad" kidney, because the prognosis for treatment of the patient depends largely on its status. In reviewing a large series of excretory urograms, I was early impressed by the fact that the urographic diagnosis of the "good" kidney consisted of three chief classifications, namely "normal," "probably normal" and "questionable." The kidneys described as "probably normal" are those in which the pelvis and calices appear to be almost normal, yet some minor detail is incomplete, such as imperfect visualization of a minor calix. It is important to know if possible just how nearly "normal" such kidneys can be expected to be if they are described as being "normal" or "probably normal" by means of excretory urography. This question is especially pertinent in view of the fact that some urologists are beginning to advocate

diagnosis by means of excretory urography alone. In the present series of 216 cases, 121 kidneys were described as being "normal" or "probably normal" from the excretory urogram. Of these 121 kidneys ninety-two had been catheterized. In twenty-four



Fig. 3. Excretory urogram, revealing tuberculosis of the left kidney.

(26 per cent) microscopic examination of the wet smear disclosed more than 3 leukocytes per high-power field of the microscope, and in twenty-four (26 per cent) the *Mycobacterium tuberculosis* was demonstrated either by special staining methods or by inoculation of animals with the urine. These observations suggest, therefore, that tuberculosis is present in more than a fourth of the kidneys described as being either "normal" or "probably normal" by means of excretory urography. Diagnosis achieved by means of excretory urography alone, therefore, is not accurate so far as the "good" kidney is concerned, and must be supplemented by ureteral catheterization and careful examination of the renal specimen of urine by wet smear, special staining methods and the inoculation of animals. Figure 3 is an excretory urogram made in an instance of tuberculosis of the left kidney in which the right kidney was described as being "probably normal." For accurate diagnosis in this particular case it would be necessary to catheterize the right kidney to obtain a specimen of urine for examination.

How often retrograde pyelography is necessary or advisable in the case of the "good" kidney is not entirely clear. Of sixty-nine "good" kidneys in the first 100 cases of this series, only seven

retrograde pyelograms were made. It is possible that this number was entirely too small, yet the fact remains that most of these retrograde pyelograms yielded very little additional information. If reasonably good visualization obtained by excretory urography is supplemented by careful examination of a catheterized ureteral specimen of urine, it would seem that a relatively high degree of diagnostic accuracy should be obtained thereby.

Thus far, in this discussion, it appears that retrograde pyelography now has little place in the diagnosis of renal tuberculosis, but this is far from the truth. It must be remembered that up to this point I have been speaking primarily of the cases in which the diagnosis of renal tuberculosis can be made easily on initial examination of the patient. Such cases would comprise roughly about three-fourths of all cases. There still remain about 25 per cent of cases in which diagnosis is more difficult and may require every diagnostic means at the urologist's command, including the making of bilateral retrograde pyelograms and inoculation of animals with ureteral specimens of urine to arrive at a diagnosis. This is especially true in cases in which the tuberculous lesions are extremely minute.

#### DIAGNOSTIC ACCURACY

On the basis of the material thus far presented, it is possible to form certain conclusions as to the accuracy of the various methods of diagnosis. It has been shown that the excretory urogram will reveal the "bad" kidney in a high percentage of cases and that this information is extremely accurate. At times this information may be supplemented by that obtained from examination of a ureteral specimen of urine from the "bad" kidney, if it is deemed necessary. In the case of the "good" kidney, however, excretory urography is not so accurate. The excretory urogram will suggest the condition of the "good" kidney, but this information is not accurate and should be supplemented by catheterization of the kidney to obtain a specimen of urine for microscopic examination by wet smear, special staining methods and the inoculation of animals. Information supplied by such a combination of diagnostic procedures is highly accurate, although occasionally the making of a retrograde pyelogram of the good kidney is advisable if visualization by excretory urography is adequate. Bilateral retrograde pyelograms are necessary only in a limited number of cases in which the diagnosis of renal tuberculosis is difficult to make or in cases in which the tuberculous lesion is extremely minute and in cases in which it is only with difficulty that the physician can decide which kidney is involved. It should be rarely necessary to perform more than one cystoscopic examination and that examination should be of short duration. Routine making of bilateral retrograde pyelograms is not necessary and is not in the interest of the patient.

Although study of these cases allows an evaluation of the comparative accuracy of the various diagnostic methods for renal tuberculosis, it by

no means answers the question of how nearly accurate diagnosis should be to enable the physician to advise proper treatment. This question is especially important when nephrectomy is being considered, because the patient has a right to know if the chances of improvement or cure justify the morbidity and risk which attend surgical treatment. It is obvious that an answer to this question involves the personal reaction of both the physician and the patient. Nevertheless, if the physician were able to study the results following nephrectomy in a large group of cases in which diagnosis had been carried out by a variety of methods, some broad principles could be elicited which should be extremely helpful when decision is made as to the type of treatment to be carried out in each case. In an effort to clarify this subject, Kibler and I made an exhaustive follow-up study of all patients for whom nephrectomy had been performed for renal tuberculosis at the clinic from 1912 to 1932, inclusive. Cases in which the patients had registered later than 1932 were not studied because it was desired that a follow-up study of at least five years in duration could be made concerning all patients. The late results of surgical treatment were studied from the standpoint of the type of investigation which had been carried out and the observations that had been obtained in the preoperative investigation of the "good" kidney. The results of this study have been fully reported elsewhere,<sup>3</sup> but a few of the more pertinent observations may be of interest herein.

It was found that 1131 patients had been subjected to nephrectomy for renal tuberculosis at the clinic between the years 1912 and 1932. We divided the cases into artificial groups depending on the results of the preoperative investigation of the "good" kidney. No attention was paid to the condition of the "bad" kidney, to the length of time the disease had been in progress, or to the existence of associated disease, tuberculous or non-tuberculous, elsewhere in the body. It was felt that in creating our artificial groups these factors would be fairly equally distributed in such a manner as not to affect the comparative results. Four large groups were created. In group 1 the "good" kidney was not catheterized. In the remaining groups the "good" kidney was catheterized so that a specimen of urine could be obtained for examination. In group 2 the centrifuged ureteral specimen of urine contained no pus corpuscles, or at least contained less than 3 leukocytes per high-power field. In group 3 there were 3 to 10 leukocytes per high-power field. In group 4 there were more than 10 leukocytes per high-power field. Groups 2, 3 and 4 were further subdivided on the basis of the results of special staining technics and inoculation of animals with the ureteral specimen of urine. Early in the study we became aware of the fact that a negative result in staining procedures on acid-fast organisms in a ureteral specimen of urine was of little significance. Therefore, the subdivisions A, B and C were made on the basis



of positive results obtained in such staining procedures and positive and negative results, respectively, obtained in the inoculation of guinea-pigs with a ureteral specimen of urine. Subdivision A indicates that no positive results were obtained in staining procedures on acid-fast organisms, and that inoculation of guinea-pigs was not carried out. B indicates that no positive results were obtained in staining procedures and that inoculation of guinea-pigs had been carried out with negative results. C indicates that positive results in special staining procedures or that positive results of inoculation of guinea-pigs, or both, were obtained. In table 1 a few of the more important groups and subdivisions are presented for comparison. It is interesting to note that the more nearly normal the kidney is proved to be, the better are the results following nephrectomy. Groups 4, 3 and 2 C contain too few cases to be of statistical value, but they illustrate well the higher mortality and lower percentage of cures that result when involvement of the "good" kidney can be demonstrated, even though the lesion may be minute or in an extremely early stage. The best results were obtained in group 2 B, which comprises the cases in which no pus corpuscles were being excreted from the "good" kidney and in which the results of inoculation of animals with specimens of ureteral urine proved to be negative.

When the urine from the "good" kidney is found to be microscopically normal and when staining for acid-fast organisms gives negative results, should the surgeon await the results of inoculation of animals with specimens of ureteral urine before

these cases, fifty-five (group 2 C) were found in which inoculation of guinea-pigs with urine had been done with positive results. In this group, only 36.4 per cent of patients were cured or improved at the end of five years, and only 30 per cent were alive at the end of ten years. On the basis of these

TABLE II  
Length of survival in renal tuberculosis; cases in which nephrectomy was performed and those in which no operation was performed because of definite bilateral disease.

		Renal tuberculosis Results of nephrectomy in a series of 1,131 cases (1912-1932 inc.), †patients traced						
Years after operation or diagnosis	Bilateral, no operation, patients traced*	Total series		Group 2‡		Group 2B		
		Living, per cent	Living, per cent	Living, per cent	Living, per cent			
5	148	58.1	1016	74.9	718	79.7	209	86.7
10	133	26.3	753	59.9	522	65.2	113	72.6
15	88	15.9	513	48.9				
20	38	7.9	251	40.3				

\* Reported by Braasch and Sutton.  
† Reported previously by Emmett and Kibler.  
‡ Group 2—Ureteral specimen of urine microscopically normal. (0 to 3 leukocytes per high-power field.)  
prognosis following nephrectomy based on preoperative observation. Results of inoculation of guinea-pigs and special staining for acid-fast organisms negative.

figures it could be argued that even a 36 per cent chance of cure or improvement, so to speak, for five years, justifies surgical treatment. Such a contention might be true, and yet consideration must be made of what the five-year result would have been if no surgical treatment had been undertaken. It is impossible accurately to answer this question; attention may be called, however, to the fact that it has been shown by Braasch and Sutton (table 2) that in a group of 133 traced patients who had grossly bilateral renal tuberculosis and for whom surgical treatment was not carried out, 26.3 per cent were alive at the end of ten years. This figure compares favorably with the survival rate of 30 per cent after ten years for patients in group 2 C who were surgically treated, but the figure does not take into consideration the condition of the patient and the vesical discomfort endured during his or her lifetime. It is also impossible to state on the basis of these tables the approximate number of cases in which inoculation of animals with specimens of ureteral urine will give positive results when pyuria is not present, since in all the cases in group 2 inoculation of animals was not done. The figures suggest, however, that the number of cases in which the results would be positive in this condition should be relatively small, and it seems that the current practice of proceeding with nephrectomy before results of inoculation of animals are known is justifiable.

Referring to table 1, it is of interest again to call attention to the inaccuracy of the clinical use of the term "unilateral renal tuberculosis." The question of in which group (table 1) the condition would be called "unilateral" would depend on the school of thought to which the physician adheres. For instance, members of the radical school, who depend almost entirely on excretory urography,

TABLE I  
Results of nephrectomy in cases of renal tuberculosis; cases grouped according to type of investigation employed and findings obtained preoperatively in the "good" kidney

Years after operation	Group*	Patients traced	
		Living, per cent	Cured or improved, per cent
5	4	45	66.6
	3	108	56.5
	2	718	79.7
	2C	55	58.2
	2B	209	86.7
10	4	25	44.0
	3	87	48.3
	2	522	65.2
	2C	30	33.3
	2B	113	72.6

\* Group 4—Ureteral specimen of urine contained more than 10 leukocytes per high-power microscopic field.  
Group 3—Ureteral specimen of urine contained 3 to 10 leukocytes per high-power microscopic field.  
Group 2—Ureteral specimen of urine microscopically normal (0 to 3 leukocytes per high-power field).  
Group 2C—Ureteral specimen microscopically normal. Tubercle bacilli demonstrated to be present by special staining methods or inoculation of guinea-pigs or both.  
Group 2B—Ureteral specimen of urine microscopically normal. Results of inoculation of guinea-pigs and special staining for acid-fast organisms negative.

he decides to remove the opposite kidney? By referring to table 1, it will be seen that in the group of 718 cases in which the specimen of urine from the "good" kidney contained no pus corpuscles (group 2), 65.2 per cent of patients were either cured or improved at the end of five years. Among

might include all these groups (table 1) under the term "unilateral," whereas the conservative school would speak only of the condition in group 2 B as being "unilateral." It can be seen from the results that even group 2 B contains cases in which tuberculosis must have been present at the time of diagnosis, even though it was not detected.

By referring to such data as are presented in tables 1 and 2 it is possible for the physician to give his patient a reasonably accurate prognosis after he has made an accurate diagnosis. It is then a personal problem between the physician and his patient as to the decision for nephrectomy. For this reason accurate diagnosis is imperative and even though operation is not delayed until the results of the inoculation of animals are known, it is extremely important that such inoculation be done so that the patient may be given a more accurate prognosis, and so that he may be more properly advised concerning his postoperative care, for, if it is known that tuberculosis is present in the remaining kidney (even though the lesion be extremely minute), the patient's general health and conduct will be more rigidly supervised than might otherwise be the case.

A word of caution should be given concerning surgical treatment in the presence of grossly bilateral renal tuberculosis. When the urine from the "good" kidney definitely contains pus corpuscles, when the *Mycobacterium tuberculosis* can be demonstrated and when the urogram suggests definite deformity of the renal pelvis, calices or ureter, the physician should be extremely hesitant in advising surgical intervention. In table 3 are shown the poor results obtained in this type of case, and although the number of cases in these groups is small, still the table suggests that the results hardly justify the

operation. Occasionally, the surgeon believes that he may be able to alleviate the marked vesical symptoms by removing the "worse of the two kidneys." In our experience this is poor policy and nearly always results in nothing but regret.

TABLE III  
Results of nephrectomy in cases of grossly bilateral renal tuberculosis in which the more involved of the two kidneys was removed.

Years after operation	Group*	Number	Traced patients	
			Living, per cent	Cured or improved, per cent
5	3C	15	46.7	20
	4C	12	33.3	0
10	3C	10	40.0	20
	4C	6	00.0	0

\*Group 3C—Ureteral specimen of urine contained 3 to 10 leukocytes per high-power microscopic field. Tubercle bacilli demonstrated to be present by special staining methods or inoculation of guinea-pigs or both.

Group 4C—Ureteral specimen of urine contained more than 10 leukocytes per high-power microscopic field. Tubercle bacilli demonstrated to be present by special staining methods or inoculation of guinea-pigs or both.

operation. Occasionally, the surgeon believes that he may be able to alleviate the marked vesical symptoms by removing the "worse of the two kidneys." In our experience this is poor policy and nearly always results in nothing but regret.

There is no doubt that data such as are presented in the tables are extremely valuable to the physician when he is deciding on treatment. It must be emphasized, however, that it is not possible for the physician to make his decision auto-

## SUMMARY AND CONCLUSIONS

The trend of diagnosis in renal tuberculosis is toward excretory urography and away from retrograde pyelography. The goal of investigation should be accurate diagnosis, and as few procedures as possible should be employed. One cystoscopic examination should be sufficient in each case, and it should be of brief duration. Repeated instrumentation is to be avoided. In about 75 per cent of cases the diagnosis of renal tuberculosis is very easily made on the basis of the history, results of physical examination and of special staining methods for acid-fast organisms in the vesical urine, which leaves the problem one not of determining the presence of the disease but rather, of determining the extent of involvement of each kidney.

The excretory urogram will indicate the "bad" kidney in most cases and it is accurate in this regard. The excretory urogram will suggest the condition of the "good" kidney, but this information is inaccurate and must be supplemented by an examination of the ureteral specimen of urine, by microscopic examination of the wet smear, special staining methods for acid-fast organisms and inoculation of guinea pigs with specimens of urine. Retrograde pyelography is rarely necessary for the "bad" kidney, but is occasionally necessary for the "good" kidney when the excretory urogram is poor. Routine making of bilateral pyelograms is an entirely unnecessary procedure and is not in the interest of the patient, either economically or physically. In a small group of cases in which the diagnosis of renal tuberculosis is in doubt, bilateral pyelograms may be necessary.

Decision as to treatment should be made only after accurate diagnosis has been carried out. The results of nephrectomy in 1131 cases of renal tuberculosis have been summarized and tabulated according to type of diagnosis and observations obtained in the investigation of the "good" kidney prior to nephrectomy. The tables presented herein indicate that the clinical use of the term "unilateral" renal tuberculosis is not justified. They demonstrate that the more nearly "normal" the "good" kidney is proved to be, the better will be the clinical results following removal of the "bad"



kidney. The results of nephrectomy in grossly bilateral renal tuberculosis are not good and do not justify performance of the procedure on the grounds that removal of the worse kidney may relieve the vesical symptoms. It is suggested that if larger groups of cases could be studied in the manner described in this paper, more nearly accurate tables could be prepared which would enable the physician to give the patient an accurate prognosis and to assist considerably in making proper de-

cisions as to treatment and the nature of preoperative and postoperative care.

The Mayo Clinic.

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## Relation of Psychiatry to Other Departments of Medical Practice

SAMUEL D. INGHAM, M.D.  
*Los Angeles, Calif.*

**D**URING the present century the field of psychiatry has been extended from the confines of sanatoriums and hospitals for the insane whose inmates were sufferers from psychoses, and where the treatment was largely custodial, until at the present time this department of medicine deals with human behavior and all of its implications, including personal maladjustments and failures, neuroses and psychoses, education, social relations, criminology. Psychiatry is tending more and more toward useful correlations with psychology, neurology, sociology, physiology, pathology, endocrinology and the practice of medicine in general.

With the advancements in medical science, specialism has become necessary, but we must beware of ultra-specialism in medical practice. Although the field is too large to be covered in its entirety, all specialists should primarily be physicians, and have some practical knowledge of all of the specialties as a background for their own.

Psychiatry deals primarily with human behavior, and therefore with all available factors that enter into human problems. The objectives of humanity are health, happiness, achievement, and the satisfactions that come with success, and the attainment of these objectives depends upon innumerable adjustments of the individual to his environment. It is the function of the medical profession to promote these objectives, not only as regards physical health, but also in regard to mental health. As the prevention of physical disease is often more successful than treatment, so education and training in the art of living are more important than psychotherapy or punishment for unhappy and maladjusted humanity. As a healthy and well trained physical body is essential for maximum physical achievement, so an educated and disciplined mind is necessary for the attainment of a maximum of success and happiness.

The psychiatrist stands somewhat apart from other physicians in that in studying human behavior he finds himself also involved in the problem of organic diseases, while other physicians primarily deal with organic conditions, and find them-

selves involved with the personality reactions of patients and their numerous advisors. It is becoming more and more apparent that the psychiatrist should have a broad practical knowledge of medical science, and that all other physicians should apply the principles of psychiatry in their work.

It is an obvious fact that all physicians practice psychiatry in so far as they deal with the personal problems and emotions of their patients. Clinical pictures seldom occur in pure types, and there is a constant interlacing of the symptoms of physical pathology and those of emotional and mental reactions to unfavorable experiences. Likewise the etiological factors of clinical pictures are usually multiple and difficult to evaluate. We are still constantly confronted with the traditional problem of differential diagnosis between "organic" and "functional" symptoms, and largely for the reason that they are coexistent in the form of vicious circles. The very fact of physical illness is to the patient a misfortune, a problem to which he reacts according to his own individual patterns of behavior. Most patients consulting physicians present two problems: first, that of physical diagnosis and treatment, and second, that of personality diagnosis which usually deserves consideration if not an active program.

Until recent years medical education has neglected the field of personality diagnosis, and it has been assumed that physicians could learn all that they needed to know about the personality of their patients through experience. In common with other departments of medicine, psychiatry is developing along the lines of scientific progress, and the purpose of this presentation is to review some of the aspects of psychiatry and their application in other departments of medical practice.

Psychiatric diagnosis, in common with all diagnosis, consists of the differentiation between normal and abnormal conditions, and it must be based upon a conception of normal human behavior. Such a conception must of necessity be somewhat vague, since "normality" is a vague term and implies a field with indefinite borders.

Personality may be said to be the integration, interactions, and adjustments of three basic psy-

chological processes (which are also physiological and biological), viz., consciousness, instincts and intelligence. Each of these processes deserves a brief consideration.

Consciousness, in the sense of awakesness and awareness, is a prerequisite for all adaptive behavior, and may be briefly defined as a state of reactivity, a readiness to respond to stimuli and to promote the patterns of thought and action appropriate for the situation. Without consciousness all other mental processes are latent; with impaired consciousness efficiency is diminished, largely in proportion to the impairment. The degrees of consciousness vary between the extremes of complete alertness, and a state of coma from which the patient cannot be aroused. Sleep is a state of reduced consciousness, of varying degrees, but differs from coma in that it is readily dispelled by sensory stimuli. Sleepers are commonly sensitized to special stimuli; the mother awakes at the cry of her child, but sleeps through a thunderstorm. Dreams and somnambulism are also manifestations of incomplete consciousness.

Instincts, which include the emotions, may be described as the innate, inherited patterns of behavior characteristic of the species, which tend to promote (1) the preservation and development of the individual, and (2) the reproduction and welfare of the race. Instinctive activities operate without training or experience, although experience and intelligence modify the activities of the instincts.

Instinctive patterns may be divided into two types, viz., 1. instinctive physical activities, including locomotion, hunting food, fighting, making love and nest building, etc., and 2. instinctive motivations, or vital drives, which are manifested in impulses, interests, curiosity, desires, wishes, hunger, yearning, craving, longing, ambition. It is to the instinctive drives that we must look for the motivation of all adaptive behavior, for the key to all personality.

Emotions are instinctive patterns of action which involve the entire physical organism, and are the manifestations of excited instinctive motivations. These action patterns may for convenience be divided into their physical and psychological components.

(A) The physical components of emotion are exemplified in decorticated animals which show pseudo-rage and pseudo-fear reactions. They include (1) instinctive movements of striped muscles in fighting, running, breathing, etc.; (2) contractions of unstriped muscles, cardiac, vasomotor, pilomotor, pupillary, gastro-intestinal, etc.; (3) glandular secretions, gastro-intestinal, sweat, renal, lachrymal; (4) endocrine activities in the production of hormones; (5) metabolic activities and biochemical adjustments, variations in blood chemistry and the concentrations of its physical contents.

(B) The psychological components of emotional reactions include: (1) the excitement inci-

dent to the recognition of an important situation; (2) concentration of the attention to the problem at hand, and the exclusion of irrelevant sensations and thoughts; (3) search in the records of experience for the means to meet the situation successfully; (4) anticipatory emotional reactions, anxiety, apprehension, doubts and fears, or of hope, courage, confidence and pleasurable expectancy; (5) during the execution of the plan of action, the emotional reactions are those of action, either aggressive or defensive, fighting or running away, according to the situation; in extreme degrees they are manifested as rage, desperation or panic; (6) thoughts and feelings after the episode has resulted in success or failure, elation and renewed confidence in the case of success, depression and discouragement in the case of failure, although failure may be the incentive to the most determined subsequent efforts. What might be termed the pathology of the emotions may be divided into those symptoms which precede action, those which accompany it, and the after effects of an important episode. Anticipatory emotional symptoms include anxiety states, apprehensions, forebodings, phobias, "crossing bridges". Abnormal emotions which occur during the period of activity may be manifested in the emotional conflicts, inhibitions or paralysis of fear, or by the desperation of panic. The after effects of success may lead to destructive "celebrations," or to excessive self-confidence which leads to calamity. Failure is followed by feelings of frustration and depression which frequently assume pathological proportions in the form of ruminations, broodings, neuroses, despondency and suicide. The after effects of emotionally charged experiences, characterized by feeling tones of elation or depression, are termed moods or affective states, and may be considered as the "afterglows" or "hang-overs" of emotional experiences. The accumulative effects of experience in the form of conscious and unconscious memory are the basis of habit formation, constructive or destructive, and are prime factors in the development of personality. Inadequate training, thwarting experiences, pathological emotional reactions and destructive habits of self indulgence are the basic factors of the psychoneuroses.

Emotions may be regarded as the symbols of personality for all to read who know the language of the emotions. They are the indicators, barometers, thermometers, volt meters, weather-vanes which reveal the pressure, temperature, voltage and direction of the internal forces of instinct. It is generally recognized that a short-cut to an intimate personal acquaintance is by way of an alcoholic party, a golf game or a fishing trip.

It may be of some interest to review in outline some of the evidence of cerebral localization in relation to the psychological (physiological) processes of consciousness, instincts and emotions, and intelligence. Clinical and experimental evidence indicate that consciousness and the regulation of sleep depend upon the physiological activity of



# Program

## ANNUAL MEETING and CLINICAL CONFERENCE

## SOUTHWESTERN MEDICAL ASSOCIATION

Nov. 21-22-23, 1940  
Tucson, Arizona

Headquarters—Pioneer Hotel

### CONFERENCE LEADERS

Dr. George Fahr, Professor of Medicine, University of Minnesota, Minneapolis, Minn.



GEORGE FAHR.  
B.S., M.D.

Born in Meadville, Pa.,  
1882  
B. S. Chicago University,  
1904

M.D., University of Wuerz-  
burg 1909

Professor of Medicine,  
University of Minnesota.

Dr. Richard B. Cattell, Surgeon, Lahey Clinic, Boston,  
Mass.

R. B. CATTELL, M.D.  
General Surgery  
Lahey Clinic  
Boston, Mass.

Born in Martin Ferry,  
Ohio, March 21, 1900; two  
years with the American  
Expeditionary Forces in the  
World War in the regular  
Army Medical Corps as a  
private; A. B. degree Mt.  
Union College, Alliance, Ohio  
1921; M. D. Harvard Medi-  
cal School, 1925; 2 year sur-  
gical internship St. Luke's  
Hospital, New York City;  
Surgeon Lahey Clinic, New  
England Deaconess, New  
England Baptist Hospitals  
since 1928; Massachusetts  
Medical Society, American  
Medical Association; Fel-  
low of the American Col-  
lege of Surgeons; Founder  
member of the American  
Board of Surgery; Member  
of the Boston Surgical, New England Surgical, American Surgi-  
cal Association.



Dr. T. T. Mackie, Professor of Medicine, Columbia  
University, New York City.



THOMAS T. MACKIE,  
M.D., F.A.C.P.,  
New York, N. Y.

A. B., Harvard; M. D.,  
Columbia; Certificate Lon-  
don School of Hygiene and  
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& H. (England); Assistant  
Clinical Professor of Medi-  
cine, College of Physicians  
and Surgeons, Columbia  
University; Associate, De-  
partment of Public Health  
and Preventive Medicine,  
Cornell University Medical  
College; Attending Physi-  
cian, Roosevelt Hospital;  
Consulting Physician, New  
York Infirmary for Women  
and Children; Consulting  
Physician in Tropical Medi-  
cine, Beekman Street Hos-  
pital.

Societies: A.M.A., Ameri-  
can College of Physicians,  
American Clinical and Cli-  
matological Association, Sec-

retary American Gastro-Enterological Association, Royal Soci-  
ety of Hygiene and Tropical Medicine, President-elect Ameri-  
can Society of Tropical Medicine.

Dr. John Lundy, Department of Anesthesia, Mayo Clinic,  
Rochester, Minn.

JOHN S. LUNDY, M.D.  
Section on Anesthesia  
The Mayo Clinic  
Rochester, Minnesota

Inkster, North Dakota, July 6,  
1894.  
University of North Dakota,  
1917, B. A.  
Rush Medical College, 1920, M.D.  
Harper Hospital, Detroit, 1919-  
1920, Internship.  
Head of Section on Anesthesia,  
The Mayo Clinic, since April 1,  
1924. Professor of Anesthesia, The  
Mayo Foundation for Medical Edu-  
cation and Research, Graduate  
School, University of Minnesota.



Dr. Willard Allen, Professor of Obstetrics and Gynecology, Washington University, St. Louis, Mo.

**WILLARD MYRON ALLEN,  
M. D.**

Professor of Obstetrics and Gynecology  
Washington University  
School of Medicine and  
Chief of Staff on  
Obstetrics and Gynecology  
St. Louis, and Barnes  
Hospitals

Born 1904, Macedon, New York. B. S. Hobart College, 1926. M. S. University of Rochester, School of Medicine and Dentistry, 1929. M. D. University of Rochester, School of Medicine and Dentistry, 1932. Fellow of the National Research Council and Assistant Resident Pathologist, Strong Memorial Hospital, 1932-33. Intern, Strong Memorial Hospital, 1933-34. Assistant Resident in Obstetrics and Gynecology, Strong Memorial Hospital and Assistant in Obstetrics and Gynecology, the University of Rochester, School of Medicine and Dentistry, 1934-36. Fellow of the General Education Board, 1934-36. Resident in Obstetrics and Gynecology, Strong Memorial Hospital, 1936-37. Instructor, 1936-38, and Assistant Professor of Obstetrics and Gynecology, 1938-40, University of Rochester, School of Medicine and Dentistry. Professor of Obstetrics and Gynecology, Washington University School of Medicine, 1939. Author of numerous publications dealing with the physiology and biochemistry of the sex hormones.



Dr. Carleton Mathewson, Jr., Associate Professor of Surgery, Stanford University School of Medicine, San Francisco, Calif.



**CARLETON MATHEWSON,  
JR., M. D.**

Associate Professor of  
Surgery

A.B., Stanford, 1923, M. D., 1927. House Officer in Surgery, San Francisco Hospital. 1927-28: Assistant, Orthopedic Clinic, Children's Hospital, University of Iowa. 1928-29: Assistant in Surgery, Royal Infirmary, Edinburgh. (Scotland). Jan.-Aug., 1929: Assistant, Orthopedic Clinic, Professor Lang, Munich (Germany). Aug.-Dec., 1929: Assistant, University Surgical Clinic, Jena (Germany). 1930-33. At Stanford since 1933.

Dr. William L. Benedict, Department of Ophthalmology, Mayo Clinic, Rochester, Minn.

**WILLIAM L. BENEDICT,  
M. D.**

Head of the Section on  
Ophthalmology,  
The Mayo Clinic,  
and Professor of  
Ophthalmology,  
University of Minnesota  
Graduate School of  
Medicine,  
The Mayo Foundation

Member of the American  
Academy of Ophthalmology  
and Otolaryngology, the  
American Ophthalmological  
Society, the American Board  
of Ophthalmology and Sigma  
Xi.



## OFFICERS OF THE SOUTHWESTERN MEDICAL ASSOCIATION

Dr. Orville E. Egbert, President, El Paso, Texas.  
Dr. William H. Woolston, President-Elect, Albuquerque, N. M.  
Dr. M. P. Spearman, Secretary-Treasurer, El Paso, Texas.  
Dr. C. A. Thomas, First Vice-President, Tucson, Ariz.  
Dr. K. D. Lynch, Second Vice-President, El Paso, Texas.

### CENSORS

Dr. C. R. Swackhamer, Superior, Ariz., Past President.  
Dr. Leroy S. Peters, Albuquerque, N. M., Past President.  
Dr. Howell Randolph, Phoenix, Ariz., Past President.

### ARRANGEMENTS

Dr. Charles A. Thomas, General Chairman, Tucson, Ariz.

### ADVISORY PROGRAM COMMITTEE

Dr. Orville E. Egbert, El Paso, Texas.  
Dr. Charles S. Kibler, Tucson, Ariz.  
Dr. Dake Biddle, Tucson, Ariz.  
Dr. Harold W. Kohl, Tucson, Ariz.

### LOCAL COMMITTEE CHAIRMEN

Dr. John Mikell, Scientific Exhibits.  
Dr. Meade Clyne, Reception.  
Dr. J. B. Littlefield, Hotel Arrangements.  
Dr. R. W. Rudolph, Entertainment.  
Dr. C. A. Thomas, Toastmaster.  
Dr. W. G. Schultz, Finance.  
Dr. W. Stanley Kitt, Finance.

## GENERAL INFORMATION

A cordial invitation is herewith extended to all doctors and their ladies to attend the convention.

The registration desk will be open Thursday morning at 8:30 a. m. in the lobby of the Pioneer Hotel. The registration fee is \$5.00 for the members of the Association and \$8.00 for visitors. The registration fee entitles the holder of a ticket to attendance at all sessions, addresses and clinics. It does not include the price of the luncheons, but does include the price of the banquet. There is no registration fee for visiting ladies.

The Association banquet will be held at the Pioneer Hotel on Thursday evening at 8:30 p. m. All speakers, members, visitors, ladies and exhibitors are invited to be present. An excellent Thanksgiving program is being planned, which will include entertainment and dancing in addition to a Thanksgiving dinner with all the trimmings.

On Friday evening at 7:30 p. m. the Pima County Medical Society WILL BE HOSTS to the doctors and their ladies at a buffet supper in the Pioneer Hotel.



# Program

PIONEER HOTEL

## THURSDAY, NOVEMBER 21, 1940

### MORNING GENERAL ASSEMBLY

9:30 A. M.

Presidential Address, Dr. Orville E. Egbert, El Paso, Texas.

"Early Management of Head Injuries from the Point of View of the General Practitioner," Dr. Carleton Mathewson, Jr., Stanford University School of Medicine, San Francisco, Calif.

"Disturbances of the Menstrual Cycle," Dr. Willard Allen, Washington University, St. Louis, Mo.

12:30 P. M. Luncheons

75 cents per plate

Round Table Discussions

#### Medical—

- (a) "Edema Formation in Nephritis," Dr. George Fahr, University Minnesota, Minneapolis, Minn.

Chairman: Dr. Howell Randolph, Phoenix, Ariz.

- (b) "Some General Discussions of the Physiology and Clinical Significance of the Vitamins," Dr. T. T. Mackie, Columbia University, New York City.

Chairman: Dr. R. B. Homan, El Paso, Texas.

#### Anesthesia—

"Discussion of Some Anesthetic Problems, Dr. John Lundy, Mayo Clinic, Rochester, Minn.

Chairman: Dr. J. B. Van Horn, Tucson, Ariz.

#### Surgery—

- (a) "Thyroid Diseases," Dr. Richard B. Cattell, Lahey Clinic, Boston, Mass.

Chairman: Dr. E. Payne Palmer, Phoenix, Ariz.

- (b) "Method of Treatment of Spiral Fractures of the Tibia," Dr. Carleton Mathewson, Jr., Stanford University School of Medicine, San Francisco, Calif.

Chairman: Dr. Felix Miller, El Paso, Texas.

#### Obstetrics and Gynecology—

"Carcinoma of the Uterus and Abnormal Uterine Bleeding," Dr. Willard Allen, Washington University, St. Louis, Mo.

Chairman: Dr. R. K. Smith, Tucson, Ariz.

#### Ophthalmology—

Dr. William L. Benedict, Mayo Clinic, Rochester, Minn. (See special bulletin on eye, ear, nose and throat meetings.)

### AFTERNOON GENERAL ASSEMBLY

2:15 P. M.

"Mechanism and Management of Chronic Ulcerative Colitis," Dr. T. T. Mackie, Columbia University, New York City.

"Some of the Indications and Contra-Indications to Commonly Used Anesthetics," Dr. John Lundy, Mayo Clinic, Rochester, Minn.

"Surgical Management of Ulcer of the Large Bowels," Dr. Richard B. Cattell, Lahey Clinic, Boston, Mass.

### THURSDAY EVENING

8:30 P. M.

Thanksgiving Party and Dinner-Dance, Pioneer Hotel.

FRIDAY, NOVEMBER 22, 1940

### MORNING GENERAL ASSEMBLY

9:30 A. M.

"Intravenous Anesthesia," Dr. John Lundy, Mayo Clinic, Rochester, Minn.

"The Mechanism of Hypertension," Dr. George Fahr, University of Minnesota, Minneapolis, Minn.

"Pathology of the Eye in Cardiovascular-Renal Disease," Dr. William L. Benedict, Mayo Clinic, Rochester, Minn.

12:30 P. M. Luncheon

Round Table Discussions

#### Medical—

- (a) "Vitamin K Deficiency in Non-Jaundiced Individuals," Dr. T. T. Mackie, Columbia University, New York City.

Chairman: Dr. O. B. Kiel, Wichita Falls, Texas.

- (b) "Recognition and Treatment of Cardiovascular-Renal Disorders," Dr. George Fahr, University of Minnesota, Minneapolis, Minn.

Chairman: Dr. W. P. Holbrook, Tucson, Ariz.

#### Anesthesia—

Dr. John Lundy, Mayo Clinic, Rochester, Minn.

Chairman: Dr. Frank J. Milloy, Phoenix, Ariz.

#### Surgery—

- (a) "Ulcerative Colitis," Dr. Richard B. Cattell, Lahey Clinic, Boston, Mass.

Chairman, Dr. W. R. Lovelace, Albuquerque, N. M.

- (b) "Treatment of Compound Fractures," Dr. Carleton Mathewson, Jr., Stanford University School of Medicine, San Francisco, Calif.

Chairman: Dr. N. C. Bledsoe, Tucson, Ariz.

#### Obstetrics and Gynecology—

"Placenta Previa and Premature Separation of Placenta," Dr. Willard Allen, Washington University, St. Louis, Mo.

Chairman: Dr. Wm. D. Carrell, Tucson, Ariz.

#### Ophthalmology—

Dr. William L. Benedict, Mayo Clinic, Rochester, Minn. (See special bulletin on eye, ear, nose and throat meetings.)

### AFTERNOON GENERAL ASSEMBLY

2:15 P. M.

"The Ovarian Hormones and Their Clinical Uses," Dr. Willard Allen, Washington University, St. Louis, Mo.

"The Eye Findings in Endocrinology," Dr. William L. Benedict, Mayo Clinic, Rochester, Minn.

"Adrenal Insufficiency and Treatment" (Natural Color Motion Pictures), Dr. J. Murray Scott.

### FRIDAY EVENING

7:30 P. M.

Pima County Medical Society Hosts

Buffet Supper for Doctors and Ladies, Pioneer Hotel.

**SATURDAY, NOVEMBER 23, 1940**

**MORNING GENERAL ASSEMBLY**

**9:30 A. M.**

- "The Treatment of Coronary Thrombosis," Dr. George Fahr, University of Minnesota, Minneapolis, Minn.  
"Surgical Treatment of Peptic Ulcers," Dr. Richard B. Catteil, Lahey Clinic, Boston, Mass.  
"Pathology and Treatment of Amebic Dysentery," Dr. T. T. Mackie, Columbia University, New York City.

**LUNCHEON**

**12:30 P. M.**

- Introduction of President-Elect.  
Closing Address, "Incoming President," Dr. Wm. H. Woolston, Albuquerque, N. M.  
General Business Meeting of the Association.  
Reports of Committees.  
Election of Officers.

**GOLF TOURNAMENT**

**1:30 P. M.**

A golf tournament has been arranged. Dr. C. E. Flood, Chairman. Place: El Rio County Club. Time: 1:30 P. M., Saturday. Handicap: prizes for ALL.

**SATURDAY EVENING, 8:00 P. M.**

Football game—University of New Mexico vs. University of Arizona.

**SPECIAL ATTENTION:**

**EYE, EAR, NOSE AND THROAT MEN**

In addition to the subjects listed on the general program, there will be a Section meeting of the Southwest Academy of Eye, Ear, Nose and Throat. Dr. William L. Benedict, Rochester, Minn., and Dr. H. G. Merrill, San Diego, Calif., will be guest speakers.

**SCIENTIFIC EXHIBITS**

The scientific exhibits should be of special interest to the visiting physicians at the Southwestern Medical Association convention. We are very happy to announce that a goodly number of the members of the Southwestern Medical Association are going to present some very interesting exhibits, and some of these are as follows:

- "Various Apparati Used in the Treatment of Crippled Children," Dr. Frank Goodwin, El Paso, Texas.  
"Treatment of Fractures in Patients over 70," Dr. Louis W. Breck, El Paso, Texas.  
"Endoscopic Aids to Diagnosis of Gastro-Intestinal Diseases," Dr. Joseph Bank, Phoenix, Ariz.  
"Studies in Diagnosis, Including Planigraphy, Intra-Thoracic Tumors, Grading of Cancer, and Blood Dyscrasia," Drs. Faris, Hayden and Lindberg, Tucson, Ariz.  
"Amebiasis," Dr. Roy Hewitt, Tucson, Ariz.  
"Distribution, Pathology and Clinical Course of Coccidio-Mycosis," Dr. O. J. Farness, Tucson, Ariz.  
Title to be announced, Dr. Reed D. Shupe, Phoenix, Ariz.  
"Results of Fever Therapy Treatment with Kettering Hypertherm," Dr. J. Mott Rawlings, El Paso, Texas.  
"Heart Disease," Dr. Charles S. Kibler, Tucson, Ariz.  
"Varicose Veins," Dr. H. D. Cogswell, Tucson, Ariz.  
"Peroral Endoscopy," Drs. W. E. Vandever and M. P. Spearman, El Paso, Texas.

At the time of going to press these were the exhibitors and their titles. There will probably be others in the Scientific Exhibits section.

**PROGRAM FOR WOMEN**

A number of social events are being planned for the wives of doctors attending the Southwestern meeting. Members of the local auxiliary are looking forward to greeting many old friends and making new ones, and hope a large number of women will accompany their husbands.

Mrs. H. W. Kohl is Chairman of the Hospitality Committee.

**THURSDAY, NOVEMBER 21, 1940**

**8:30 P. M.**

Thanksgiving Banquet and Dinner-Dance, Pioneer Hotel.

**FRIDAY, NOVEMBER 22, 1940**

**LUNCHEON**

**1:00 P. M.**

After luncheon a motor ride about Tucson and environs is scheduled. This will include a visit to the "Old Tucson" locale of the moving picture "Arizona."

**7:30 P. M.**

A buffet supper at the Pioneer Hotel for the ladies and their escorts.

**COMMERCIAL EXHIBITS**

- Holland Rantos Company.  
Blair Surgical Supply Company.  
Sandoz Chemical Works, Inc.  
G. E. Electric X-Ray Corporation.  
Southwestern Surgical Supply Company.  
Pelton & Crane Company.  
The Borden Company.  
The Carnation Company.  
Aungers Arizona Brace Shop.  
Ayerst, McKenna and Harrison (U.S.) Ltd.  
Don Baxter and Company.  
Eli Lilly and Company.  
A. S. Aloe Co.



groups of nerve cells in the hypothalamus. Emotional patterns are motivated in the diencephalon, mainly in the thalamus and hypothalamus. Vegetative and endocrine functions are also regulated to a large extent from structures in the hypothalamus, acting through the sympathetic nervous system. They stand in close physiological relationship to the emotions. The cerebral cortex and its connections represents intelligence and provides for the recordings and elaborations of experience, the acquisition of skill, and the guidance of voluntary movements.

Clinical cases are commonplace in which consciousness is lost, and all processes of instinct, emotion and intelligence are suspended. In such cases it may be assumed that the hypothalamus is affected by pathological or physiological processes. Other clinical cases show defects of intelligence without impairment of consciousness nor of emotional reaction. These are particularly exemplified by pathological conditions affecting the cortex or its connections thus impairing the patterns of memory and thought associations, notably in the aphasias, agnosias and apraxias. Still other cases show gross impairment of instinctive drives and emotions with intact consciousness and intelligence, as illustrated by the following brief record.

An auto mechanic was suffocated by exhaust gas in a garage and was unconscious for a number of hours. Since this accident, which occurred more than a year ago, he has shown no interest, curiosity, ambition, elation or depression, enjoyment or worry, no initiative or sense of responsibility. He is emotionally passive, never starts a conversation but participates by making appropriate answers to questions. His manner is pleasant, contented, docile in doing what his wife tells him to, he never complains about anything. During a neurological examination a very painful stimulus was given; although sensation was intact and he described the feeling as painful, he did not flinch and said it did not bother him. In contrast to this emotional flattening and absence of instinctive drive, this man's intellectual faculties are relatively unimpaired although he uses them but little. His memory is good, he is oriented in his environment, uses language and mathematics well to the extent that he can be induced to do so. Prior to the accident this man was a dominating, energetic person, industrious, ambitious, critical, normally aggressive and emotional. Now, he has but little incentive to employ his knowledge and intellectual faculties which are relatively intact because he has lost the drives of instinct, the excitement of action, and the feelings of elation and depression which result from success and failure.

In contrast to this case are innumerable people in whom instinctive drives, emotional reactions and the affective states are abnormally active and out of control to an extent harmful to themselves. Patients manifesting such reactions are diagnosed as manifesting psychoneurotic, psychopathic or psychotic symptoms. Normal personality implies a

balance or equilibrium based upon the harmonious integration and interactions of instinctive forces and the knowledge and skill which comes from experience. Instinctive drives and emotional reactions are innate, and knowledge is acquired, but instincts are constantly modified and directed by the intellectual faculties of memory and foresight. They are also affected by psychic trauma, and psychic trauma means emotional trauma, or sensitization predisposing to abnormal emotional reactions which are comparable to physical allergy. A horse may be ruined permanently for human service by bad training or accidents, and the result is a habit of intractable fear or rage reactions. The instinctive motivations and emotions in man run closely parallel to those of other animals, and a boy as well as a colt may be ruined by the psychic traumata of faulty training. Adults are likewise emotionally conditioned or sensitized by shocking experiences, and by minor disturbing experiences occurring in prolonged series. (parlor experiments.)

Psychiatric diagnosis implies the analysis of personality as a whole and with regard to the integration of its component factors. Theoretically, and to a large extent practically, the causes of abnormal behavior may be divided between those which are termed "organic" and those which are "psychogenic" or "functional". The former implies that the primary causes were traceable to disturbances in the structure of the nervous system, malnutrition, ischemia or congestion, anoxemia, intoxication, physical irritation or pressure, traumatism, and pathological lesions causing destruction of tissue. Psychogenic factors are those which are primary in the psychic field, particularly frustrating experiences highly charged with unfavorable emotional reactions, and followed by abnormal moods and affective states. The behavior symptoms manifested with organic disease may be in part psychogenic because of the emotional reactions to illness, and the sequelae of psychogenic disturbances may include organic symptoms precipitated by the extensive vegetative reactions which accompany emotional excitements and disturbed affective states. Such interacting factors and interlacing symptoms tend to the formation of complex clinical pictures and "vicious circles", which are commonplace in everyday medical practice, and exceedingly difficult to analyze.

#### PERSONALITY DISORDERS

The following abbreviated classification of personality disorders and mental diseases has been found useful in psychiatric diagnosis:

##### (A) Congenital deficiencies.

Defects of intelligence; feeble-mindedness of varying degree.

Defects of personality; constitutional psychopathic inferiority of various types.

Defects in endocrine development with associated deviations in personality development.

(B) Organic reaction types, the factors of which include practically all cerebral pathology, malnu-

trition, avitaminosis, infections, intoxications, exhaustion, endocrine imbalances and involutional changes including senility.

(C) Manic-depressive psychosis, characterized by two phases of abnormal affective states; 1. the manic phase with hyperactivity and exhilaration, and 2. the depressive phase with retardation and despondency. There is a tendency to recurrences or alternations of phases.

(D) Schizophrenia, or Dementia Precox, subdivided into special types; 1. hebephrenia, 2. catatonia, 3. paranoid psychosis, 4. mixed types. The psychic symptoms vary according to the types, but all types present certain characteristics in common: (a) withdrawal from contacts with reality and personal responsibility; (b) artistic thinking, day-dreaming, fantasy formation and delusions; (c) lack of consistency or continuity in instinctive motivations, emotional reactions, affects and sentiments; (d) dissociation or disconnection between the mental content, manifested by conversation, and the emotional reactions, manifested by behavior (depersonalization).

(E) Psychoneurosis, subdivided into: 1. neurasthenia, 2. psychasthenia, 3. anxiety neurosis, 4. obsessions and compulsions, 5. anxiety hysteria, conversion hysteria, 6. symptomatic depressions. Symptoms vary with types, but tend to overlap. In general they are considered to be psychogenic in origin and represent futile attempts to compensate for frustrations and failures, to obtain sympathy and help from others, or to escape from problems and responsibilities.

From a practical standpoint, all patients may be divided into those who are legally committable to institutions and those who are not. Those who are committable include the more severe cases of acute and chronic psychoses, those who are inadequate to care for themselves under normal conditions or who constitute a menace to themselves or others on account of psychic disturbances. Those who are not committable include all other patients presenting personality problems, and physicians in all departments of medicine must deal with them. From the answers to a questionnaire sent to a group of surgeons and internists it has been estimated that in about 25% of their patients the primary diagnosis was psychoneurosis or "nervousness". It is probable that important emotional disturbances occur and deserve attention in more than 50% of all who consult physicians.

#### TREATMENT

The treatment of psychic disturbances and personality problems may be considered from several different viewpoints. 1. Treatment of organic, toxic, and deficiency conditions which impair the functions of the nervous system. 2. Treatment of personality reactions incident to the fact of physical illness. 3. Treatment of personal maladjustments and psychoneuroses that are primarily psychogenic, but often lead to physical ill-

ness. 4. Vicarious treatment of the patient through conferences with his relatives, friends and advisers.

(1) The treatment of organic, toxic and deficiency conditions is the responsibility of all physicians. Each department of medicine contributes its part to physical rehabilitations, and incidentally to the psychic rehabilitations of their patients. The surgeon removes a brain tumor or abscess, or an enlarged thyroid gland; the neurologist prescribes thiamine chloride for multiple neuritis; the psychiatrist induces hypoglycemic shock with insulin; the internist relieves stuporous and confused mental states and delirium by the use of antitoxic and convalescent sera, sulfanilamide, sulfapyradine; the gynecologist relieves premenstrual tension, and eases his patients through the menopause by the use of ovarian hormones; the obstetrician is faced with the problems of the toxemias of pregnancy and the puerperal and post puerperal psychotic states.

(2) The treatment of patients for the personality reactions incident to their illnesses resolves itself to the matter of tactful handling of the situation by the physician. The unfavorable emotional reactions of those who are ill included doubts, anxieties, apprehensions, panics, worries, depressed moods, discouragement and hopelessness. Much can be done by the considerate and tactful doctor to boost the patient over the critical periods. The principles of treatment in this respect are to alleviate illogical doubts and fears and to stimulate confidence, hopefulness and courage to face the situation. Sick people are sensitive to the attitude of those about them and are alert to interpret the actions as well as the words of the doctors and nurses. Much can be done for the benefit of the patient by a planned program of tactfulness by all who come in contact with the patient. (Dr. Crile's Anoci-association).

(3) The treatment of personality maladjustments and psychoneuroses comes within the scope of so-called psychotherapy, which in the last analysis is the desensitization of hyperactive emotional reactions and emotionally conditioned thoughts and behavior, and education in the art of living successfully. The procedure is largely educational, and aims to give the patient an insight into the cause of his symptoms and understand his own misconceptions, prejudices and mistakes. Through his intelligence it helps him to take an inventory of his personality assets and liabilities, and an evaluation of his opportunities in terms of his desires and ambitions. It encourages self-expression and recreations which are constructive, expand the personality and relieve emotional tensions, but warns against ill considered self-indulgence of instinctive drives without counting the cost, or who pays the piper. Self-expression and self-indulgence are not synonymous. Psychotherapy is not only critical and more or less prohibitive of self-indulgence, but it is also constructive by inducing patients to face facts and be honest



with themselves, by stimulating patience and courage, by emphasizing the importance of personal organization and industry, and by suggesting plans which offer reasonable prospects of success through personal accomplishment. It teaches them how to gain self-confidence, independence, and self-respect, and the confidence and respect of others. It promotes self-determination and helpfulness toward others rather than dependence and an "infinite capacity for receiving favors". It proposes the philosophy of wise and successful selfishness, on the assumption that all acts, even self-sacrifice for others, are primarily selfish, and that a friendly and helpful attitude toward society is a good personal investment. Psychotherapy improves of the principles of morality and ethics in the sense that "honesty is the best policy" without special regard to laws or religion. It suggests that loyalty to a partner is as important in a domestic partnership as it is in a business partnership.

(4) The treatment of the relatives, friends and advisers of a patient is often a more difficult matter than dealing with the patient. The physician makes an analysis and diagnosis of the case, and formulates a plan of treatment which may include changes of diet and other habits, hospitalization, surgery, or whatever seems indicated. He then becomes a salesman and must sell his plan to the patient, but he often meets sales resistance in the form of doubts and fears, expense, the council of friends, and a lack of confidence in the doctor. It is therefore obvious that the sales program should include those who influence the patient. The plan of treatment is often rejected because of the failure to sell it to the family and friends. Even when accepted and instituted, the treatment may be interrupted by adverse criticism and advice to the patient to "change doctors". To secure harmony and cooperation it is advisable for the physician to deal with each person who is a factor in the situation, to win his approval and to retain it as long as the situation requires. Many points of importance come up in this connection and a few may be mentioned. High-pressure salesmanship generally fails, either in making a sale, or by acting as a boomerang. Controversial discussions are worse than useless because they stimulate opposition, and winning the debate often creates an opponent. Criticism can sometimes be converted into approval by asking the critic with friendly sincerity what he advises, with the tacit implication that he assume the responsibility for the success or failure of his plan. It is well for the physician to offer rather than force his plan, to furnish facts in regard to diagnosis and prognosis, to outline and advise a course of treatment, and to require the patient or some responsible member of his family to make decisions and take his share of the responsibility. The physician should insist upon being given authority in proportion to his responsibility and should deny responsibility for the plans of others. As an example of a situation a recent case may be cited.

The patient was incompetent to assume full personal responsibility, and the following list of interested people were repeatedly interviewed: wife, intelligent, energetic, critical; mother, Christian Scientist, clever, scheming, primarily antagonistic; three children, 14, 16, and 21 years of age; female cousin and advisor of the wife; lawyer, business associate of the patient; lawyer, consulted by the wife; business secretary of the patient; psychiatrist, suggested by the wife's lawyer and interviewed by the wife, but did not see the patient; two physicians who were temporarily on the case, one of whom referred the patient; uncle of the patient, prominent business man; chauffeur and housekeeper, employed in the patient's home.

Each of these fifteen people played a part in the case requiring the attention of the psychiatrist, each was critical, had a personal interest and a personal viewpoint, and all were happy at the favorable outcome of the case after six months of interviews, during which the patient was treated with vitamins, insulin, psychotherapy, etc.

The following suggestions are offered as axiomatic rules of psychotherapy, not that they are new, but for the reason that they deserve emphasis. Few physicians, even psychiatrists, always remember to apply the rules of common sense in their professional relationships.

#### CASE MANAGEMENT

1. Be persistent in telling and proving that you have a friendly interest in the welfare of your patient. Sincere professional friendliness reinforces professional knowledge and skill in winning confidence and cooperation.

2. Study the emotional habits and sensitizations of people, and avoid wounding their pride or insulting their intelligence. Be as considerate of their physical and mental comfort as you would those of a house-guest.

3. Never tell a patient that there is nothing the matter with him, and that he must "snap out of it". Such statements convince the patient either that you do not understand his complaint and are accusing him of insincerity, or that he has some serious condition that you do understand but are covering up.

4. Be consistently honest and tell all necessary facts, but carefully prepare the way for bad news that must be told, and for constructive personal criticism that may hurt pride. False encouragement is usually futile.

5. Do not accuse your patients of their faults, but ask them if they have any and what they are. They tolerate self-criticism better than the fault-finding by others.

6. Do not discuss the patient or his symptoms with others in his presence or within his hearing, and so protect him from the tactless remarks of others and your own ill-considered statements.

7. Be a good listener and thus get your patient's viewpoint and his confidence at the same time.

8. Do not blame the patient unduly if he fails to follow your directions. Perhaps you have not sold him sufficiently on your plan of treatment, or even on yourself as a doctor. If your salesmanship is good enough he will take his medicine.

9. Under all circumstances keep your own emotional composure. Losing patience or temper is evidence of professional inadequacy and the indulgence of personal felings. It may be compared to a father angrily punishing a child, or a dentist impatiently pulling a tooth; he might get the wrong tooth!

10. Avoid the attitude of defeat. Patients understand facial expressions and mannerisms often better than words, and the air of doubt or discouragement on the part of the physician reacts unfavorably on the emotions of the patient.

11. Commendation and approval, sincerely given, serve as sugar coating for necessary criticism, and as antidotes for discouragement.

12. Do not continue too long as a crutch for your patient, or make too many decisions for him. Give him information which he may use and help him to formulate plans, but induce him to decide for himself and carry his own responsibilities within the limits of his capacity.

13. Do not advise or approve of extramarital sex relationship as a therapeutic measure. Sex is a double-edged sword and often cuts in the wrong direction. The emotional and sentimental reactions involved in the entire field of the reproductive instincts cannot be satisfactorily adjusted on a superficial or temporary basis. It is better for the patient to sublimate his sex energy in the direction of constructive occupation and intellectual development than to seek relief in illadvised self-indulgence and so jump out of the frying-pan into the fire.

In conclusion it may be emphasized that all practicing physicians, of whatever school or specialty, are dealing with human personality as well as physical disease, and therefore are practicing psychiatry either consciously or intuitively and with varying degrees of success. To the psychiatrist it appears that efficiency and success in other departments of medicine will be promoted by the study and application of the established facts and principles of psychiatry, and that advances in psychiatry will be promoted by a broader knowledge of the physical and chemical factors of disease on the part of the psychiatrist.

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## Bronchial Obstruction

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**B**RONCHIAL obstruction has been discussed periodically for the past several years. The subject is rarely treated as an entity. Most of the papers discussing bronchial obstruction deal with various aspects of the problem. It has been our feeling for sometime, that bronchial obstruction should be dealt with as an entity rather than from the viewpoint of its component parts. It is the purpose of this paper to point out the most essential diagnostic factors of bronchial obstruction—to indicate something of the physiology which are involved in the production of the various signs and symptoms. The most common findings in the history and the physical examination of a patient suffering with bronchial obstruction will be indicated and the leading factors of roentgenological diagnostic methods will be discussed. The etiological agents producing bronchial obstruction will be classed and indication of the correct lines of therapy will be shown.

Bronchial obstruction may be defined as a syndrome which presents a definite group of clinical, physical and x-ray findings, which appear in a fixed sequence, the exact nature and extent of the findings being dependent on the development of the obstruction at the time the condition is studied.

Bronchial obstruction may be either acute or chronic. The acute obstruction most frequently

results from inspissated foreign bodies. The foreign bodies may act in a number of different ways, depending upon the size, shape and exact position of their arrestment. Vegetable bodies, such as beans and seeds, frequently give rise to a particular type of bronchitis, due to their protein content. These bodies always result in acute bronchial obstruction. With metallic bodies, the symptoms may be present for a time and then become quiescent, producing what is commonly termed the "symptomless interval", and remain in this state for periods of time varying from a few hours to several years.

Chronic bronchial obstruction results chiefly from tumor growth of the mediastinum or the bronchi themselves. The obstruction may result from the production of inflammatory granulations. Chronic obstruction may also be the result of congenital webs:

- I. Endobronchial
  - A. Foreign Body
    1. Opaque foreign bodies
    2. Non-opaque foreign bodies
      - a. Inspissated
      - b. Post-operative
- II. Peribronchial
  - A. Tumors
    1. Benign tumors
    2. Malignant tumors
    3. Inflammatory
    4. Congenital Stenosis



### III. Extrabronchial

#### A. Vascular

1. Annuerysm of the aorta

#### B. Glandular

1. Tubercular glands in the mediastinum
2. Hodgkin's glands in the mediastinum
3. Malignant glands
  - a. Primary
  - b. Metastatic.

Numerous investigators have pointed out and conclusively proven the method by which the lung is emptied and protected from invading extraneous bodies. The lining of the respiratory tract is covered with ciliated apethelium. The action of the cilia is towards the mouth.

The second most important defense mechanism is the peristaltic action of the bronchi and bronchials. The third and perhaps most powerful mechanism is the cough reflex. The exact mechanism of this phenomenon is a disputed question. Suffice to say the results produced by the cough tends towards emptying the lung of foreign material.

There is a small amount of normal secretion in the secondary bronchi and terminal bronchioles. This is an important factor in aiding the defense mechanisms of ridding the lung of invading agents. This secretion is produced by the numerous epithelial cells which are scattered through the tracheo-bronchial tree. The nature of the invader may determine the abundance of secretion present in the distal portion of the bronchi. In the case of vegetable matter, secretion is abundant, whereas with metallic bodies, secretion is small. The amount of secretion is always dependent upon the completeness of the obstruction and the presence of infective material.

The location of foreign bodies in the tracheo-bronchial tree determines the exact nature of the diagnostic signs and symptoms. Bronchial obstruction may be caused from the obstruction of the larynx, the trachea or the bronchi themselves. In diagnosing the conditions of bronchial obstruction, the same rules apply as in making diagnosis in any other field. The history is important. Due to the dramatic effects caused by acute bronchial obstruction, the patient and surrounding persons are very apt to give inadequate and incorerct statements.

Persistent questioning will frequently give clew to an aspirating foreign body. The history obtained with chronic bronchial obstruction is varied and contains only a few significant points. Hemoptysis, shortness of breath and cyanosis occur most frequently in the histories of patients suffering from chronic bronchial obstruction.

### LARYNGEAL FOREIGN BODIES

The most common symptoms resulting from foreign bodies in the larynx may be tabulated as follows:

- |               |                 |
|---------------|-----------------|
| 1. Hoarseness | 5. Wheezing     |
| 2. Aphonia    | 6. Haeomoptysis |
| 3. Cough      | 7. Dyspnoea     |
| 4. Stridor    | 8. Cyanosis     |

Obstruction in the larynx, due to a foreign body, is frequently a transient thing, because it may slip below the larynx, it may slip down the esophagus; and it may be spat out. Acute obstruction of the trachea most frequently causes hoarseness, cyanosis and dyspnoea. Foreign bodies in the bronchi themselves usually result in the production of cough, dyspnoea, cyanosis and frequently hoeomoptysis.

Chronic bronchial obstruction is not so dramatic in its onset as is acute obstruction. The symptoms caused by chronic bronchial obstruction depend, of course, upon the type of etiological agent producing the obstruction. Dyspnoea, haeomoptysis and cyanosis are the chief symptoms which occur. With malignant neoplasms, the patient may show extreme emaciation.

The symptoms caused by obstruction of the larynx are well known and the invader is very easily demonstrated with the aid of a posterior laryngeal mirror. Foreign bodies in the trachea are generally moveable. They produce an auditory slap, which may be heard by placing the ear or stethoscope over the persons trachea, or at the patient's mouth. The asthmatoïd wheeze is another unique sign of foreign body in the trachea. Occasionally it is possible to place the finger over the patient's trachea and feel a definite thud as the foreign body shifts its position. At this point allow us to sound a note of caution. Do not turn patient upside down and strike on the back. We have seen two deaths result from this procedure. The foreign body was unpacted into the larynx and death occurred due to strangulation.

### BRONCHIAL FOREIGN BODIES

Foreign bodies in the bronchi themselves, give rise to the following signs:

1. Limited expansion on the effected side.
2. Diminished breath sounds distal to the obstruction.
3. Altered breath sounds at the location of the obstruction.
4. Vocal fremitus is frequently decreased beyond obstruction.
5. The percussion note is generally impaired beyond the point of obstruction.

The diagnosis of bronchial obstruction is very difficult to make upon the physical findings and history alone. The chest must be studied by x-ray methods. Plates should be made at both extremes of the respiratory cycle in order that the obstruction may be located more accurately. The method we employ is to fluoroscope the patient first. The fluoroscope is carried out from the top of the nasopharynx to the ischial tuberosities. In this manner foreign bodies at either extremity of the patient examined are rarely missed. In the case of an opaque body in the upper portion of the chest, it

is our practice to give the patient a capsule of barium sulphate, have him swallow it and watch its course under the fluoroscope. This procedure serves to differentiate the location of the foreign body in the esophagus from one in the trachea. If the obstruction proves to be in the respiratory mechanism, chest plates are then made. While the x-ray films are being exposed, the patient is cautioned not to take a deep breath, but to breathe as normally as possible. By this method, areas of emphysema may be discovered, whereas, if the patient has taken a deep breath, as is the common method of making chest plates, the area would be entirely overlooked. The x-ray findings of bronchial obstruction depends entirely upon the completeness of the obstruction. If the obstructing agent acts as a ball valve permitting air to enter and very little to leave, obstruction emphysema is apparent on the x-ray plate. This area of the lung field is over-inflated and, of course, is increased in transparency. The mediastinal contents are displaced away from the affected side. The diaphragm is generally flattened and frequently less motile than on the unaffected side. The intercostal spaces are widened on the affected side. If the obstruction is complete, or if the obstructing agent is of

vegetable matter, abundant secretion is present. This results in the condition frequently termed as "drowned lung", the terminal result of obstructive atelectasis. The x-ray plate shows the mediastinal contents drawn towards the affected side. The obstructing area is more dense in appearance, the intercostal spaces are flattened. The diaphragm is usually fixed and slightly elevated. The volume of the lung becomes less.

The treatment of bronchial obstruction depends entirely upon the etiological agent producing the obstruction. If this cannot be determined from history, physical and roentgenological examination, the bronchoscope must be used. Foreign bodies of the respiratory passages are now more easily removed by endoscope methods in the hands of the trained endoscopist.

If the obstructing agent is malignant neoplasms, several courses of treatment are indicated. First of all, it may be possible to remove the growth through a bronchoscope; secondly, it is always possible to implant radium at the site of the tumor; thirdly, massive doses of x-ray may be used and lastly, lobectomy or pneumonectomy may be employed.

Professional Bldg.

## Retention Catheter Treatment of Vesico-Vaginal Fistula

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### *Case Report*

THE conservative treatment of vesico-vaginal fistula by retention catheter appears to be a somewhat neglected surgical procedure. A search of the literature reveals the fact that very little has been written concerning this subject, and that only a very few authors have described cures by this method. It is true that certainly all instances of this distressing condition cannot be cured by such a simple measure (nor are all of them cured by one operation, for that matter). Yet, for those cases where operation is undesired; where conservative effort can be given a trial preliminary to a more radical attempt at cure later if permanent catheterization fails; for undesirable operative risks, etc., the procedure appears to have a place.

Apajalahti mentions 45 cases treated conservatively by permanent catheterization with complete healing in 10 instances. Deutschman in 1932 reported four cases.

O'Connor in 1938 reviewed the meager literature on this subject and reported six cases, two of whom received anti-luetic treatment for syphilis which had been discovered in the course of examination.

Ottow & Quinby have suggested cystoscopic electro coagulation of the fistula for the purpose of stimulating the process of healing in conjunction with continuous bladder drainage.

The following case presentation describes an instance of vesico-vaginal fistula which was completely cured in four months by permanent catheterization.

### CASE REPORT

Mexican, age 57, female.

This woman was first seen on April 3, 1939, complaining of vaginal urinary leakage. Upon examination a constant flow of urine was seen to be issuing from the vagina with a great deal of scalding and irritation to the perineum.

Vaginal examination revealed a vesico-vaginal fistula deep in the vagina and a midline abdominal scar was present in which there was a large herniation. She stated that she had been operated upon about three months previously. The history obtained concerning this operation was as follows:

In December 1938 she sought medical attention because of vaginal bleeding, having passed the menopause several years previously. Examination at that time disclosed a suspicious lesion on the cervix and biopsy revealed that the lesion was Grade Three carcinoma. On December 21, 1938, a total hysterectomy was performed elsewhere. The tubes and ovaries were not removed. During the convalescence she developed urinary drainage through the vagina. She was told that she had a



vesico-vaginal fistula and operation was advised. However, she did not desire any further surgery and suffered the inconvenience of continued urinary soiling up until she was first seen in our office four months after the operation.

As she was determined not to have any more surgery conservative treatment was planned. Consequently, she was hospitalized on April 8, 1939, the urethra dilated, and a large Pezzer catheter inserted into the bladder for continual drainage. She was placed on her abdomen and stayed in this position for ten days when the Pezzer catheter was removed, due to the irritation it had produced, and she went home. A few days later we were encouraged to find that even though there was still vaginal drainage of urine, the bladder was retaining a small quantity of urine whereas previously it had retained none.

On May 3, 1939 she was returned to the hospital and at this time the bladder and urethral irritation had subsided. A Pezzer catheter was inserted and continual urinary drainage effected as before. She remained in the hospital a week and during this period of hospitalization the symptoms of nausea and vomiting and diarrhea first appeared, but symptomatic medication brought them under control. Stool examination was negative and study of her blood revealed a four plus Wassermann and marked secondary anemia.

She left the hospital with the retention catheter in place and remained in bed for several weeks until the catheter produced so much urethral and bladder irritation that it was removed and left out until all signs of irritation disappeared, then it was reinserted and we were encouraged to note that the bladder capacity was gradually increasing all the while.

In August, 1939, approximately four months after treatment was started she was completely dry and the bladder was found to contain a normal quantity of urine upon catheterization with no vaginal leakage whatsoever. The treatment pursued during this interval had been to leave the retention catheter in the urethra as long as possible until urethral and bladder irritation necessitated its removal; then as quickly as the irritation subsided the retention catheter was reinserted. During the first month she was in bed most of the time. During the last three months she was up and about, sitting in a chair most of the time, carrying a gallon jug around the room with her, into which flowed the continual urinary drainage from the retention catheter.

Before she remained continually dry there was a period when she was completely dry upon sitting and walking but upon going up stairs vaginal leakage occurred. However, as the bladder function slowly was restored to normal, this soon disappeared and she was completely and thoroughly dry at all times.

On November 29, 1939 she was admitted to the hospital once more with the complaint of nausea, vomiting and diarrhea. This was the second time

these symptoms had appeared. The ventral hernia was giving her some concern, too, at this time, and the blood pressure was found to be 180-100. The Wasserman was repeated and found to be positive, as before. Marked secondary anemia was still present and stool examinations were negative. In a few days her symptoms of nausea, vomiting and diarrhea were relieved by symptomatic treatment and she left the hospital, at which time anti-luetic treatment was started, together with periodic liver injections and dietary efforts directed at the correction of the anemia.

For about four months she enjoyed comparatively good health. Her bladder function was entirely normal and she remained dry continually. However, on January 24, 1940 she was admitted to the hospital once again with the previous symptoms of nausea, vomiting and diarrhea. At this time the right kidney was found to be markedly swollen and tender. Cystoscopy was done but a definite impassable obstruction was found in each ureter just behind the bladder. A flat x-ray plate was made (K. U. B.) which, besides showing the right kidney to be swollen, was unremarkable. Renal function tests were made which disclosed that the kidneys were functioning very poorly. Only 6.4% of the Phenolsulphonphthalen was recovered during a four hour interval. The N. P. N. was 62. Spinal fluid examination revealed a cell count of 8; globulin, positive; Kahn & Eagle, negative.

On January 27 cystoscopy was repeated. Again at this time, definite obstruction was found in each ureter just behind the bladder, as before. Rectal examination was made and a hard nodular mass was felt in the pelvis. The sensation to palpation was similar to that found in a man with a large, hard, nodular prostate. A Hinman catheter was inserted into the right ureter plugging the orifice completely and Skiodan was injected, hoping that a pyelogram could be obtained of the right kidney and ureter. However, none of the dye passed the absolute obstruction in the ureter.

Intravenous pyelograms were made now, but presumably due to the greatly decreased secretory power of the kidney very unsatisfactory pictures were obtained. No shadows were seen in either kidney area and only a slight suggestion of a shadow was observed in the bladder. X-rays of the gastro-intestinal tract disclosed no definite pathology. However, an appreciable degree of pyloric spasm was noted.

On January 31, 1940 she left the hospital greatly improved. The swollen right kidney had subsided, as well as the nausea, vomiting and diarrhea. Presumably the cystoscopic manipulation of the ureters had improved the urinary drainage on the right side and allowed the kidney to empty itself. For the next two and a half months she again enjoyed comparatively good health, and was coming to the office regularly, during which she received anti-luetic and liver injections. The anti-luetic treatment consisted of small doses of Bismuth Subsalicylate and Potassium Iodide oral-

ly. Due to her diminished renal function it was not considered wise to give Arsphenamine.

On April 19, 1940 she was admitted to the hospital for the fifth and last time with the same complaints as previously, nausea, vomiting and diarrhea. This time the urine was found to be quite purulent, also. Stool examinations were repeated once more and were negative. The vomiting was more profuse now than it had ever been. She was unable to retain any food or water without vomiting. Intravenous glucose and saline were started which at first improved her general condition but not for long. She became comatose after being in the hospital a few days; the urinary output diminished; the coma deepened, and death ensued on April 25, 1940.

#### AUTOPSY REPORT: (Dr. L. O. Dutton)

The body is that of an elderly Mexican woman showing emaciation. The only external feature of note is a large protruding ventral hernia in the midline just below the umbilicus. Only the abdomen was opened. The hernia ring was seen to be about 4 1/4 inches in the greatest diameter. Stomach and intestinal tract were normal. Liver and spleen were normal. Uterus was absent. Wall of the bladder was thickened and inflamed, and the organ contained a small quantity of purulent urine. Posterior and above the bladder there was a large, irregular, dense mass which was intimately adherent to the posterior bladder wall and the rectum, and through which both ureters coursed.

Within the mass the ureters were constricted almost completely. Above the mass the ureters were dilated to about 1/2 inch in diameter, and the kidney pelvis was dilated. The kidneys showed gross evidence of nephritis, with damage to the cortex and the pyramids.

Microscopic: Sections of the mass show numerous nests of embryonic epithelial cells which

failed to show any characteristics that would indicate their point of origin.

#### ANATOMICAL DIAGNOSIS:

- (1) Medullary type carcinoma of the pelvis with obstruction to the ureters.
- (2) Cystitis.
- (3) Dilatation of the ureters and the pelvis of the kidneys.
- (4) Pyonephritis.

Cause of Death: Anuria and uremia, incident to above pathology.

#### SUMMARY

Reconstructing the events taking place in this case, they appeared to have been as follows:

For carcinoma of the cervix a total hysterectomy was done elsewhere. Presumably metastasis to the pelvis had already taken place at the time of this operation.

Following the hysterectomy a vesico-vaginal fistula appeared which was cured in four months by the conservative procedure of instituting continual bladder drainage by means of retention catheter.

The persistent symptoms of nausea, vomiting and diarrhea were evidently due to the metastatic growth of carcinoma in the cul-de-sac invading the ureters just behind the bladder, and also the rectum, producing increasing obstruction to the urinary flow resulting in pyelonephritis, uremia and ultimate death.

Mills Bldg.

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## Abdominal Surgical Emergencies

E. PAYNE PALMER, M.D.

Phoenix, Arizona

THE presence of an acute abdominal pain, of nausea and vomiting for as long as six hours, should make one suspicious of an acute abdominal emergency that requires a diagnosis, if possible, before determining for or against surgery. Prompt action is usually called for in such cases, as they frequently occur in persons previously well; though they may develop in the patient ill from other causes.

Nevertheless, the patient with an abdominal emergency should be examined carefully, as I have said, to determine the diagnosis. He should not be subjected to an immediate operation until the

physician is certain the indications are definite and the patient is in the best condition possible for the operation. Emergency operations are hazardous, and the mortality rate is high; for only too frequently are they performed without diagnosis, without preoperating preparation, without an established schedule, without proper surgical assistance, and without an organized operating room staff. All of these things tend to lessen efficiency and to increase morbidity and mortality. In the vast majority of cases there is no indication for unnecessary haste in operating. A reasonable delay, with time spent in trying to decide upon a diagnosis and in studying the patient's general condition, may lead to a decision to delay



the operation or to take time to perform it under more favorable conditions. Though under some conditions a definite diagnosis can not be made, time spent in attempting such a diagnosis, and in preparing the patient for the procedure will still reward one for the effort, for this time will give a decreased morbidity and a lower mortality.

#### APPENDICITIS

Appendicitis is responsible for 50 per cent of abdominal emergency surgery, and there is an ever increasing mortality rate, now approximating 25,000 deaths annually. There are two types of appendiceal diseases, i.e., the acute inflammatory and the obstructive type. Appendicitis may occur at any age. It is rare under two years, but it does occur in a rapidly increasing proportion above this age. It is most frequent between the second and third decades. The most important symptoms in acute appendicitis are pain—first located in the epigastrium or in the region of the umbilicus, which later localizes in the right lower fossa—nausea, vomiting, and irregularity in bowel habits. Children have convulsions. Tenderness is the most important physical sign, the maximum being over McBurney's or Lanz points. Rectal examinations should be made in all cases that are suspected of having acute appendicitis, as the location of the appendix in the pelvis frequently confuse the diagnosis. The temperature may vary from normal to 101°F, and, unless the patient is a child, a hyperpyrexia is rarely seen. The pulse rate is usually in proportion to the temperature. Leucocytosis is usually constant although variable, with an increase in the polymorphonuclear leucocytes.

Acute appendicitis in infancy and childhood runs a rapid destructive course; so an early diagnosis is most important. In the aged it may resemble intestinal obstruction of slow onset with an "acute indigestion" pain commonly referred to the epigastrium, rarely to the right iliac fossa. Appendicitis is a surgical disease amenable only to surgical treatment; the patient should be operated upon as soon as the diagnosis is made, and he has been properly prepared, provided there are no contraindications. An appendectomy with intraperitoneal conditions permitting a closure of the wound without drainage will result in a prompt uncomplicated recovery. In the first forty-eight hours of the attack, even when the degree and extent of tenderness and rigidity suggests spreading periacute appendicitis, complicated by a spreading peritonitis, is best treated conservatively until the acute process subsides; then it may be operated upon later. In case of an appendiceal abscess formation, the operation should be delayed until localization is complete. If the appendix cannot be found at once, establish drainage, close the peritoneum partially, and pack the wound with vaseline gauze; subsequently in six to eight weeks the appendix may be removed. The age of the patient should never influence one's judgment in deciding upon the type of treatment; the physical

and pathological findings alone should indicate what course to follow.

#### CHOLECYSTITIS

Acute cholecystitis is usually accompanied by severe abdominal pain, nausea, vomiting, an elevation of temperature and pulse rate, leucocytosis, and jaundice. There is also muscle rigidity and a palpable tender mass in the right upper quadrant. If we add to this picture recurring chills, then a cholangitis is to be suspected. The latter is a disease of the greatest seriousness. Gangrene and perforation are not infrequent, especially in patients over sixty years of age. Consequently they should be suspected when there is an increase of pain and leucocytosis.

The majority of cases of acute cholecystitis should be treated conservatively. The physician's first task is to relieve the pain and restore the biochemical balance. If the symptoms persist with an increase of pain and leucocytosis, then an operation is indicated. The procedure to be followed will depend upon the condition of the gall bladder. Cholecystostomy may seem advisable; however, cholecystectomy is preferable whenever it is possible. An incision through the seromuscular coat of the gall bladder and shelling out the mucous membrane is most satisfactory, or a partial cholecystectomy, with excision of all the gall bladder except that portion attached to the liver; the mucous membrane of this area should be destroyed by electro-coagulation and a tag of omentum sutured over the raw area. With acute cholangitis, drainage of the gall bladder and common bile duct should be established without undue delay. It must be remembered, however, that exploration of the common bile duct is inadvisable in the presence of an acute inflammation.

#### DUODENAL AND GASTRIC ULCERS

Duodenal and gastric ulcers hemorrhage and perforate. The incidence of hemorrhage with perforation occurs in approximately 1 per cent of patients with ulcers. Massive hemorrhage frequently appears without having shown any previous symptoms; usually it evolves from a posterior duodenal ulcer. It is sudden in onset, causing faintness, weakness, pallor, and a rapid, feeble pulse. Vomiting of blood is frequent, and tarry stools will follow. The diagnosis of a hemorrhage from duodenal and gastric ulcers can usually be made from the history and roentgenograms. An operation during the acute stage may be a life saving measure in a massive or recurring hemorrhage, which does not stop spontaneously. Ligation of the bleeding vessel is indicated in spite of seriousness of such a procedure. With duodenal hemorrhage from an ulcer on the posterior wall, a transduodenal ligation of bleeding vessel or separation of the duodenum from the base of the ulcer, ligate the eroded vessel and close the duodenum. In gastric hemorrhage, the bleeding artery is ligated or the ulcer excised. When the ul-

(Continued on page 348)

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Southwestern Medical Association  
El Paso County (Texas) Medical Society

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## AXE GRINDING

Ill blows the wind and sorry are the times that dull man's sense of the proprieties when the scientific journals of the land forsake their rich cultural fields for the smelly barnyard of politics.

The usual crisis is upon us that makes jittering maniacs out of ordinarily reasonable creatures. This is the crisis where "America stands at the cross roads"—as it does every four years, depending upon who is doing the viewing with alarm. As physicians we are apt to boast between presidential elections of our calm, objective judgment regarding humans and their frailties. We imagine that we are reasonable, balanced, and smile charmingly at other men's foolishness.

And now the feet of clay are uncovered to the view of all. Certainly, as citizens medical men should have convictions and beliefs regarding candidates for office. By the same token—citizens of what? Our own particular interests, or those of the American people at large? In forming our political opinions let us not make the mistake of deciding against the candidate for any office who is not promising our own little pressure group the moon and its lovely mountains. Let us carefully discriminate between convictions based on the common good as contrasted to those springing from narrow personal desires. If our democracy is not to fall of its own burden of conflicting weights of various pressure groups a few million of our own citizens are going to have to begin thinking in

terms of the national good.\* That goes for any group with special interests to maintain. Any member of Congress can elaborate this thesis ad infinitum. After which bold aside it should be repeated that physicians individually should have firm notions about politics, just as should the banker or lawyer or anyone else. But, in the name of common sense, what place can these politics properly occupy in the councils of organized medicine? What a sacrilege to drag smelly carcasses in the house of science! Yet, in the past two months, several of the leading medical journals of the country have lent their columns to office seekers for purely political purposes. Editors of non-partisan scientific publications should remember that one of the important rules of that branch of journalism is this: axes are not ground at any time, for anybody! For when the axes begin to get ground, the alleged objective journal of science becomes somebody's house organ or promotion pamphlet. Recognition of this tenet is not spineless acquiescence in the status quo, good or bad as it may be. It is simply a definition of one's field of endeavor, and a statement of awareness that that field is large enough and rich enough to require all of one's talents in laboring therein. Organized labor has met with much bitter criticism, and has lost much of its power to advance some of its worthy aspects by indulging officially in politics. So might be said of other pressure groups in the country. Let organized medicine beware of enthusiasts, sincere though they be, who now or hereafter attempt to lead their profession into the tricky, smelly realm of politics. That high place in public opinion that medicine now proudly occupies could be lost in a twinkling, if the people ever get the notion that medicine is playing politics, and is truant from its own field—taking care of the health of the nation.

Every man likes a short spree of some sort at some time. But the smart fellow knows when to stop short of dipsomania. Dog days are past, but perhaps just a bit of madness fringed over into cooler times when our cherished colleagues let down the bars in their journals to politics "as she is played." For the sake of the calling we love and esteem, let the prayer be wafted that the camel may yet be kicked out of our tent. It is time for doctors of medicine to return to their jealous mistress.

No axes ground today!

## RED CROSS HOSPITAL SOCIAL SERVICE

Expansion of our armed forces to several times their present size means an expansion of Red Cross activity on behalf of the armed forces of the United States. This activity, incidentally, is an obligation imposed on the organization by its Congress-

\* You will not be affirming your ideals if you vote because you think you will personally gain something by it. You will not be affirming your ideals if you vote out of ignorance. (In this country no one is obliged to be ignorant.) You will not be affirming your ideals if you make your choice for a President of all America on the basis of some local issue or some local prejudice.—LIFE, October 21, 1940.



sional Charter, and one which must always be met adequately.

A realization of what may be required of the Red Cross may be had from the knowledge that during the past year more than 40,000 men of the Army, Navy, Marine Corps and Coast Guard, or members of their families, received some sort of assistance in meeting their problems. Though many of these cases are of comparatively minor importance to all but the individual concerned,



there are quite a number that are classified under Medical Social Service and which are daily proving the value of this increasingly important Red Cross activity.

Anent this activity, Captain Lucius W. Johnson, of the Navy Medical Corps, had this to say in a recent article, "Administration of Naval Hospitals," which appeared in the magazine *HOSPITALS*:

"Social Service is a field of great importance in Naval hospitals. When a man is disabled and discharged from the service, aid is needed when he returns to his home to reestablish him there, so that he will not be a burden on the community. Family emergencies occur, and worry over them may be a serious handicap to a patient's recovery. In mental and disciplinary cases it is often important to determine the man's social and family background. There is a very satisfactory arrangement with the American Red Cross, which maintains expert social workers in our Naval hospitals to aid in adjusting such difficulties in human relations. It is a pleasure to pay tribute to this beneficent organization and to its representatives, who do so much to smooth out the rough spots and to make life happier for both staff and patients."

Only in periods of great emergency does the Red Cross make a special appeal for funds. Its normal activities are all supported from low annual membership dues and such voluntary contri-

bution and gifts received for that purpose. Ahead of the Red Cross lie heavy tasks and expansion of its home services. To meet these obligations it needs the support of all those who believe in its aims and principles. During the annual Roll Call, which begins November 11 and ends November 30, everyone will be invited to join a local chapter and thus keep the Red Cross prepared to meet all its obligations.

### CIVILIAN MEDICAL OFFICERS

The expansion of the army creates a need for about 600 civilian medical officers in various grades for temporary and part-time service. The duties of full-time officers will be to act as doctors of medicine in active practice in hospitals, in dispensaries, and in the field. The duty of part-time officers will be to report for sick call at a fixed hour each day and to be subject to emergency call at all times.

The Civil Service Commission in making this announcement calls particular attention to the fact that part-time officers will be able to continue their regular practice. In order that this may be done, appointments to the part-time positions will be made of medical officers in the vicinity of the place of duty.

Information concerning these positions may be obtained from the Secretary of the Board of the U. S. Civil Service Examiners at any first- or second-class post office, or from the United States Civil Service Commission, Washington, D. C. Physicians are urged to apply at once. This work is of the greatest importance to the success of the National Defense program.

### ON TO TUCSON!

Elsewhere in this issue, contained in a supplement, is the completed program for the 26th annual convocation of the Southwestern Medical Association. For the first time in a supplement of this type pictures of the honor guests are shown. There is promise of a full schedule for all in attendance. For 2½ days every hour is filled with activity.

It has long been known that post-graduate sessions such as the Southwestern Medical Association provides are valuable in helping to increase the general level of medical education in the territory served. Meetings of state societies cannot carry all the burden, hence cooperative groups must lend aid. A meeting such as this scheduled to open in Tucson November 21 offers a concentrated course in the new in medicine. It is difficult to understand how any physician who is interested at all in keeping pace with his demanding profession can wilfully neglect to attend post-graduate training schools brought to his very door by the various clinical societies, as does the Southwestern Medical Association. No long trip across the continent is necessary, no huge monetary expense—for rather the best and the newest come to the man in the field who will but give heed, plus a few days of his time. The cost, because it is a cooperative endeavor, is a small trifle. The returns to the man in attendance are immeasurable.

The Tucson committees have arranged for one of the most complete and well-balanced programs ever sponsored by the Association. They now offer this work of theirs for the scrutiny and certain approval of the entire medical profession of the Southwest.

See you in Tucson November 21.

## Special Section

# Arizona State Medical Association

PRESTON T. BROWN, M. D., *Associate Editor*  
403 Professional Bldg., Phoenix, Arizona

### REPORT OF THE ARIZONA DELEGATE TO THE EIGHTEENTH ANNUAL SESSION OF THE WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

The eighteenth annual session of the Woman's Auxiliary to the American Medical Association was convened in the grand ballroom of the Pennsylvania Hotel in New York City, Tuesday morning, June 11, 1940. Delegates representing every organized woman's auxiliary in the United States were in attendance. Mrs. Rollo K. Packard of Chicago was the presiding officer by virtue of her office as president. After the invocation by the Rev. Alfred Grant Walton, D.D., of Brooklyn, N. Y., Acting Mayor Newfold Maurice of New York City extended the hospitality of the metropolis to the delegates and friends.

In response to the address of welcome, Mrs. J. D. Hamer of Phoenix, Arizona, recounted the activities and accomplishments of the individual and combined auxiliaries of the past, and very skillfully and entertainingly described the beauties of our own Southwest. Her talk was accepted attentively and enthusiastically.

After the disposition of routine business, including the reports of officers and standing committees, the remainder of the two general sessions were devoted to the president's message and excellent talks by guest speakers, which included Dr. Rock Slyster, president of the American Medical Association; Dr. Morris Fishbein, editor of the American Medical Association Journal and Hygeia; Dr. Nathan B. Van Etten, president-elect of the American Medical Association, and Alphonse M. Schwitalla, S. J., Ph. D., dean of St. Louis School of Medicine.

The entertainment features of the convention included two delightful luncheons at the Hotel Pennsylvania, the annual dinner for the auxiliary, also at the Hotel Pennsylvania, and a reception and ball for the president of the American Medical Association at the grand ballroom of the Waldorf-Astoria.

Sightseeing and shopping trips, attendance at the New York World's Fair, and scenic flights over New York City were at the disposal of the convention guests.

Much credit is due to Mrs. Carlton F. Potter, general chairman of the local convention committees, and her assistants for a well ordered program.

Mrs. V. E. Holcomb of Charleston, W. Va., was installed as president for 1940-41.

Respectfully submitted,

MRS. H. W. KOHL.

### PRESIDENT'S MESSAGE

At the convention of the Woman's Auxiliary to the American Medical Association in New York City in June, the question which was present in all reports and all discussions was: "How can the auxiliaries render the best service, not only to the medical profession, but to their respective communities?"

The chief problem seems to be that of finding a program which will give opportunities for satisfying service and stimulate interest in the work. Many eligible members are still outside of our ranks because of the lack of such a program.

Probably our most effective work can be done through three of our committees, namely the Public Relations, Hygeia and Legislative. Serious thought must be given, too, to the social side of organization and the promotion of friendly relationship between the members. The developments of the medical military preparedness should also be followed with much interest and concern.

The national organization this year is asking the state organizations to concentrate on increasing the circulation of the *Bulletin*, the official organ of the Woman's Auxiliary to the American Medical Association. Through the medium of this publication all auxiliary information of interest to the auxiliary membership can be transmitted. The *Bulletin* gives a clear picture of what is going on, what is likely to happen, what can be done about it, and what the auxiliary can do about it. This information will come from the leading authorities of the medical profession. Having such information is most important to all of us, because we cannot be of service to others until we have first informed ourselves.

May we adopt this year's national theme of "Look Forward," and be of real service to our profession and our committees.

MRS. J. D. HAMER.

### NATIONAL OFFICERS 1940-1941

- Pres.—Mrs. V. E. Holcombe, Charleston, W. Va.
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- Cor. Secy.—Mrs. M. I. Mendeloff, Charleston, W. Va.
- Treas.—Mrs. David W. Thomas, Lock Haven, Pa.



## President's Page

### THIS BUSINESS OF VOTING

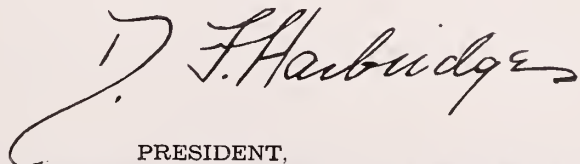
ELECTION DAY is at hand. Those who will make and administer the laws of our state and land will be selected by the voters on Tuesday, November 5. The physicians of Arizona should be prepared to vote on that day. As citizens they should be concerned in seeing that only qualified persons are selected to important offices. As physicians they should support candidates who can be counted on to protect the health and well-being of the people.

There was a time when physicians gave little thought to candidates for office, and there also was a time when the candidate for public office gave little or no thought to the attitude of the medical profession on governmental questions. This is changing, and today finds both the medical profession and the candidate on the playing field. Let it be understood that as an organization the medical profession is not officially aligned with any political party, but we are becoming vitally concerned in governmental issues, both locally and nationally, and more and more the fair stand of the medical profession in these matters is being recognized by candidates for all offices.

Therefore, it is urged that physicians turn out and vote on November 5. Much depends on your participation in the election, as the relationship between the government and the medical profession can be good or bad, depending on the quality of those holding legislative and administrative offices.

VOTE!

Faternally yours,

A handwritten signature in dark ink, reading "D. F. Harbidge". The signature is fluid and cursive, with a large, sweeping initial "D" and a long, horizontal flourish extending to the right.

PRESIDENT,  
ARIZONA STATE MEDICAL ASSOCIATION.

## Southwestern Medical Association MEETING

Tucson, Arizona  
November 21, 22 and 23, 1940

Official Convention Headquarters  
PIONEER HOTEL

RATES { Single room—\$3.00 per day.  
Double room, double bed—\$4.00 per day.  
Double room, twin beds—\$5.00 per day.  
(All rooms with private baths)

There will be plenty of rooms.

In another section in this issue of the Journal, you can find the official program for the meeting. It will really be a post-graduate assembly with intellectual nuggets for everyone attending.

### ENTERTAINMENT

Since the Governors of Texas, New Mexico and Arizona are officially proclaiming Thursday, November 21, as Thanksgiving Day, the Pima County Medical Society has arranged for the banquet and dinner dance on that night instead of Friday. No efforts have been spared by the entertainment committee and the management of the Pioneer Hotel in carrying out a real Thanksgiving motif. To most of you Thanksgiving is still Thanksgiving and comes on the last Thursday of November, which is exactly one week later, and can be celebrated as usual at home.

Remember also that Thursday, November 21, is a legal holiday and there will be no patients in the office. Since most of you do not have office hours Saturday afternoon, you will only be losing a day and a half.

The ladies will be thoroughly entertained by the banquet, luncheon, buffet dinner, golf, trips to "Old Tucson" and other points of interest.

On Saturday afternoon the golfers will have a tournament at the El Rio Country Club, and there will be prizes for all.

### FOOTBALL

The kick-off between the traditional rivals, the University of New Mexico and the University of Arizona, comes at 8:00 o'clock Saturday evening (Nov. 23) at the stadium on the University of Arizona campus.

The cheering section and the band of the University of Arizona are arranging some special between-the-halves entertainment for the doctors and their ladies.

We expect the football game to be the climax of good fellowship and good-will among the members of the profession of the Southwest.

We wish to group the medical group together in the stadium. Reserved seats will cost \$1.65 each, including the tax.

You can golf, visit or go sight-seeing Saturday afternoon, see the football game Saturday night, and return leisurely home Sunday.

Monday morning, November 25, you can get back into the saddle greatly refreshed and armed with additional knowledge for the diagnosis and treatment of your patients.

### COME ONE - - - COME ALL

Make all hotel reservations and reservations for the football game, including a check for your seats, through—

DR. J. B. LITTLEFIELD  
311 Valley National Bank Building, Tucson, Arizona  
Chairman, Hotel Arrangements Committee



# *Welcome---*

## MEDICAL FRATERNITY TO YOUR HEADQUARTERS HOTEL

ALL BUSINESS SESSIONS AND SOCIAL ACTIVITIES  
WILL BE HELD HERE



MAKE RESERVATIONS EARLY

RATES: Single from \$3.00 per day  
Double from \$5.00 per day

### PIONEER HOTEL

TUCSON, ARIZONA

J. M. PROCTER, Manager

## ABDOMINAL SURGICAL EMERGENCIES

(Continued from page 341)

cer perforates into the pancreas, the stomach is separated from the pancreas, the artery is ligated, the raw surface sutured, and the stomach closed. Use local infiltration anesthesia when operating to check duodenal and gastric hemorrhage; transfuse before and after operation. Perforation of duodenal and gastric ulcers is estimated to occur in 10-15 per cent of all recognized cases. Perforation produces agonizing pain in the abdomen, boardlike rigidity of the abdominal muscles, shallow costal type respirations, pallor, an anxious expression. Shock may be present. Vomiting occurs in 50 per cent of the cases. Usually there is a normal temperature until peritonitis develops. Roentgenograms will show the presence of a gas bubble. Following perforation, the sooner the operation the better; an operation within six hours will save the patient. After twenty-four hours, his chances are greatly reduced. Use local infiltration anaesthesia, simple suture closure of the perforation, re-enforcing the suture line with omental graft. By all means complete the operation quickly. Follow the operation with transfusions, give intravenous of glucose solution freely, but give very little morphine. The highest incidence of fatal complications are thoracic; primary shock is also very high. Perforating gastric carcinoma produces the same symptoms as perforating ulcers; it is naturally a more serious condition, and peritonitis frequently results. Usually a partial gastrectomy will be necessary, as closure of the perforation will frequently result in failure to heal. The termination then is fatal.

### INTESTINAL OBSTRUCTION

Acute intestinal obstruction is a condition to be feared by all, as it is the most fatal of all intestinal conditions. Even though the disease is better understood today than fifty years ago, no appreciable reduction has been made in the mortality, still about 40 per cent. With intestinal obstruction, not only is the outward passage of the contents of the bowel prevented, but there is invariably interference with the blood supply of the bowel and toxemia. Paroxysmal abdominal pain is the cardinal symptom. Distention, nausea, vomiting, and obstipation, with an absence of fever and leukocytosis, should make one suspicious of acute intestinal obstruction. An elevated leukocyte count and a high polymorphonuclear percentage should make one suspicious of gangrene of the bowel. Intussusception usually occurs in infancy and childhood; it is the second most frequently encountered cause of an acute surgical condition of the abdomen in these patients. There is a sudden onset of acute abdominal pain followed by shock; this condition subsides and intermittent cramping continues. The stool shows a bloody mucus and in most cases a palpable mass. A rectal examination is most important. Hernias produce obstruction in early adult life, adhesions in the

middle aged, and carcinoma in the more elderly. A flat x-ray will aid in the diagnosis and localization of the lesion. Preoperative preparation to restore the body fluids and chlorides, transfusions, the administration of oxygen, and the use of Wangensteen suction are most important. Spinal anesthesia is the choice in intestinal obstruction. Early operation will reduce the mortality. After operation 3,000 to 7,000 c.c. of fluids should be administered daily until the patient is convalescing. Repeated transfusions have saved many patients.

### PANCREATITIS

Acute pancreatitis is usually a disease of middle age; it is, however, rare. Severe and persistent pain located in the mid-epigastrium or to the right of the midline is the outstanding symptom. Nausea and vomiting are constant symptoms. The pulse rate and temperature are elevated. Jaundice is present in about 25 per cent of the cases. Leucocytosis and the polymorphonuclear count are invariably high, and the diastase contents of both blood and urine are increased in the early stage of the disease. The abdomen is distended; there is tenderness in the epigastrium; and at times a mass can be felt. Because of the high mortality rate following immediate operation, I have adopted the conservative treatment in acute pancreatitis. Nothing is given by mouth; fluid balance is maintained by adequate intravenous of glucose solution and subcutaneous injections of normal saline solution in amounts of 3,000 to 5,000 c.c.; Wangensteen stomach suction is used with morphine to relieve pain, and accompanied by transfusions. When there is difficulty in arriving at a correct diagnosis, then an exploratory operation should be performed, provided the patient has had proper preoperative treatment.

### DIVERTICULITIS

Diverticulitis rarely occurs before the fourth or fifth decade of life. Inflammatory lesions occurring in Meckel's diverticulum usually simulate pain in the region of the umbilicus and the passage of blood per rectum are common. Hemorrhage, perforation, and obstruction may occur. Diverticula of the left half of the colon frequently become inflamed, suppurate, and perforate, giving us "left sided appendicitis". With an acute inflammatory mass in the left lower abdomen, one should suspect this condition. There will be fever, leucocytosis, and a tender mass will be felt on palpating the abdomen and upon rectal examination. The treatment of diverticulitis is first of all a medical problem. Acute perforation calls for immediate laparotomy, obstruction for colostomy.

### MESENTERIC ADENITIS, EMBOLISM, AND THROMBOSIS

Mesenteric adenitis in childhood presents a difficult problem. There is usually an active infection of the throat. Generalized abdominal pain is present with little tendency to localize. There is also fever, nausea, and vomiting; diarrhea may



occur. Muscle rigidity and diffuse tenderness are present. Mesenteric embolism and thrombosis may be either arterial or venous. The clinical picture is one of very sudden acute obstruction with internal hemorrhage, accompanied by marked shock. This will be accompanied by a falling temperature and rising pulse, pallor, early and rapid distention, hematemesis, melena, and free fluid in the peritoneum. Immediate laparotomy and resection of the affected gut offers the only hope.

#### ABDOMINAL GYNECOLOGICAL EMERGENCIES

Ruptured ectopic gestation is usually accompanied by a sudden abdominal pain, by faintness, pallor, rapid pulse, subnormal temperature, vomiting, and frequently shock. A pelvic examination will disclose signs found in early pregnancy, tenderness about the adnexia of one side, and perhaps a small mass. An irregularity of menstrual period will aid in the diagnosis. Unless cessation of bleeding has occurred, transfuse and operate immediately, for patients frequently die from primary hemorrhage. Hemorrhage from ruptured graafian follicle, endometriosis cyst, and lutein cyst may occur at any period during the menstrual life. The symptoms are similar to those of ruptured extra-uterine pregnancy, without a missed menstrual period; there will be no softening. Unless bleeding ceases, these conditions call for surgical intervention. A twisted pedicle of an ovarian cyst or uterine fibroma frequently present abdominal emergencies.

An accurate diagnosis in any of the foregoing conditions is frequently impossible, and uncertainty of diagnosis is one of the principal indications for surgical treatment. One should make every effort, however, to reach a correct diagnosis before operation. Nevertheless, the life of the patient must not be jeopardized by too long a delay in such an effort. An exploratory operation is not desired either by the surgeon or the patient; yet when one is faced with a difficult problem and has held consultation, one is certainly justified in an exploration in an effort to relieve pain and save a life.

#### WHEN NOT TO OPERATE

In abdominal surgical emergencies, unless there are very definite indications for a quick operation, one should not operate on patients suffering from acute respiratory infections, pneumonia, pleurisy, acute endocarditis, cardiac decompensation, acute nephritis, hypoglycemia and hyperglycemia in diabetes or any of the acute infectious diseases. Continuing the list, nor should one operate in cases of coma, delirium, shock, acidosis, alkalosis, acute insanity, acute, secondary and pernicious anemias, blood dyscrasias, or any of the chronic debilitating diseases. Cutaneous infections of the abdomen are likewise a potential danger, and marked abdominal distention will increase the surgical risk. Again, abdominal distention, a rapid heart, and a low blood

pressure are absolute contraindication for surgery. When any of these conditions exist, if possible, either the operation should be delayed, and the patient treated medically until he becomes a better surgical risk, or the operation should not be done at all.

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## NEWS

### General

"Pay-Your-Doctor Week", inaugurated two years ago by California Bank in Los Angeles on a purely local basis will be observed this year from October 27 to November 2 in scores of cities throughout the country with banks in the various communities sponsoring the movement.

Recognizing the fairly widespread tendency to regard doctor bills as obligations that can wait indefinitely or at least until all other bills have been paid, "Pay-Your-Doctor Week" is proclaimed in order to call attention to the plight of many doctors who to their great inconvenience are on call 24 hours of every day, but who are often paid at the convenience of their patients.

Because "Pay-Your-Doctor Week" was originated by a bank without the assistance of the medical profession, no question of ethics is involved and the movement has been hailed with favor by members of the medical fraternity everywhere.

Banks who sponsor "Pay-Your Doctor Week" in various cities throughout the country publicize the idea widely, using newspaper advertisements, bill boards, car cards and the like to call attention to the occasion and to the fact that banks have on hand funds to lend for the excellent purpose of paying doctor bills.

The Surgeon General of the Navy, Rear Admiral Ross T. McIntire (MC), U. S. N., states that the Medical Corps of the Navy is being increased in strength proportionate with the expanding Navy and the Marine Corps. Examinations for appointments as commissioned officers in the Medical Department of the Navy will be held January 6 to 9, 1941.

He also announced that appointments are being made in the Medical Corps, USNR, of male citizens, graduates of class "A" medical schools, who are under 50 years of age and who meet the physical and professional requirements.

The examination to be held in January will be for appointment as assistant surgeon in the Medical Corps of the Regular Navy, effective approximately two months from date of examination, and for acting assistant surgeon, interne, effective July 1, 1941. Requests for authorization to appear for these examinations should be submitted to the Bureau of Medicine and Surgery, Navy Department,

in sufficient time to permit the authorization to reach the applicant prior to December 30, 1940.

Applicants for appointments as assistant surgeon must be citizens between the ages of 21 and 31, graduates of class "A" medical schools and have completed one year of intern training in a hospital accredited for intern training by the Council on Medical Education and Hospitals of the American Medical Association.

Applicants for appointment as acting assistant surgeon, intern, are not required to submit evidence of previous intern training, and are appointed for a period of 18 months, during which time they serve as interns in the larger naval hospitals which are approved for intern training. After completion of one year of service acting assistant surgeons are eligible for examination for appointment as assistant surgeons. Acting assistant surgeons and assistant surgeons receive the pay and allowances of a lieutenant (junior grade).

### *El Paso*

A meeting of the El Paso County Medical Society was held September 9, 1940 at 8:00 P. M. in the tea room of Hotel Cortez. The program was as follows:

"Renal Tumors" (3 Case Reports)—Dr. A. W. Multhaupt.

"Metal Bone Plates in the Treatment of Fractures"—Dr. D. M. Cameron.

A regular meeting of the El Paso County Medical Society was held September 23, 1940 at 8:00 P. M. in the tea room of Hotel Cortez. The program was as follows:

"Gangrenous Perforated Appendix"—Dr. B. F. Stevens.

"New Technique Demonstration Peptic Ulcer"—Dr. W. W. Waite.

The regular meeting of the City-County Hospital Staff was held Wednesday, September 18, 1940, at 6:30 p. m., at City-County Hospital. The program consisted of a case for diagnosis, presented by Dr. Parker. Discussion by Drs. E. K. Armistead, J. J. Gorman and Norman Giere.

A Staff meeting of the Hotel Dieu Sisters' Hospital was held Tuesday, October 1, 1940, at 12:10 o'clock in the auditorium of the Nurses' Home. Luncheon was served. The program was as follows:

"Acute Osteomyelitis and Staphylococcal Septicemia Treated with Sulfathiazole"—Dr. J. L. Murphy.

Discussion by Dr. L. Breck and Dr. E. A. Duncan.

"Acute Cholecystitis. Cholangitis"—Dr. L. Villareal.

Discussion by Dr. R. Holt.

The monthly Staff meeting and dinner of the Southwestern General Hospital was held Thursday, September 26, 1940, at 6:30 p. m. in the hospital

auditorium. Election of officers was held. The scientific program was as follows:

"Ectopic Pregnancy"—Dr. E. K. Armistead.

Discussion by Dr. W. J. Pangman and Dr. W. W. Waite.

## MISCELLANY

### COLOR VISION

New color blindness tests have been compiled by U. S. military authorities, thereby making this country independent of Germany and Japan, principal sources of previous color perception tests.

The new tests, approved for use in the armed forces of the United States by the Surgeon-General, will replace as a national standard in this country the Ishihara test, printed in Japan, and the Stilling system, of Germany, both of which are practically impossible to obtain due to the war.

The new compilation, which will be distributed by the American Optical Co., incorporates the best of the Ishihara and Stilling tests and adds features leading to the detection of those persons who do not wish to pass a color blindness test and also those attempting to hide their color blindness.

The new color blindness test is composed of 46 diagrams or charts which are in patterns (figures, letters, etc.) made up of variously shaded dots of the primary colors set on a differently colored background of similar dots in confusion colors. While the figures are easily seen by a normal person, the color-blind individual, unable to differentiate colors, cannot distinguish the figures from the background. In mild forms of color blindness, hesitancy in naming the figures reveals the weakness.

The 46 plates provide for the detection of each type of color blindness, the particular type and degree being determined by noting the plates missed or read with hesitation. As the mere naming of the figures or letters suffices, color ignorance does not interfere with the test, while for testing a completely illiterate or speechless person all he has to do is trace the outline of the designs seen.

### DEATH FROM SULFANILAMIDE: A CALIFORNIA COURT DECISION

Physicians and a clinic were absolved from liability for a death due to sulfanilamide, and a precedent was established by a medical legal opinion given on January 10, 1940, by Superior Court Judge Clement L. Shinn in Los Angeles.

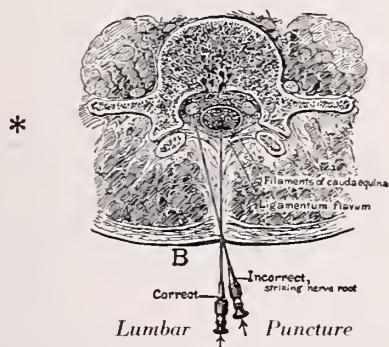
A white male patient, suffering from an acute specific infection, was treated with sulfanilamide at a venereal disease clinic for a period of five weeks. Subsequently he developed complications from the use of the drug and died. A malpractice suit was instituted against the physicians and the clinic, and following is the opinion of the Court:

This young man was being given a dangerous

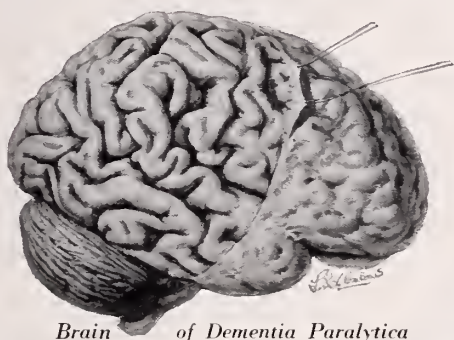


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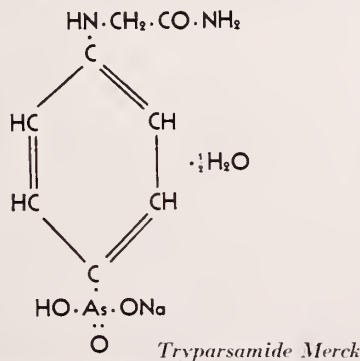
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\* (*The Modern Treatment of Syphilis*, by Joseph Earle Moore, M. D. Charles C. Thomas, Springfield, Ill., and Baltimore, Md., 1933.—By courtesy of author and publisher.)

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drug. He was not being treated for a consideration; he was being treated for his own good by an experienced doctor—a man who appears to me to be a competent and conscientious man. There are, of course, recognized and unavoidable dangers in certain types of treatment, and physicians as a rule do their utmost to minimize these dangers. The medical profession has to progress, not for its own good, but for the good of humanity, and types of treatment which are efficacious cannot be abandoned because they are not utterly safe. Accidents will happen. Here was a young man who fell in that indeterminable class who cannot tolerate or handle this drug in considerable quantities. It does not appear that there was any way for the medical profession to tell who could or could not handle the drug except by using it and watching the results; and when they tried it out on this patient they were not doing wrong by him. If they had been successful, it would have changed his entire life. He certainly was leading a miserable existence the way it was. He had had other treatment. It may be that this remedy was the only one that would have reached his case. We don't know about that. He did what appeared to be the right thing in going to the clinic and submitting to the treatment. The drug was not given in excessive quantities. The young man was given printed instructions, advising him to watch for certain enumerated manifestations of ill effects. These instructions had been carefully prepared by competent authorities, and listed the unfavorable reactions that were known at that time. He was instructed to report to the doctor immediately upon the discovery of any of these symptoms, and he was an intelligent young man. Once a week he was examined, and tests which were generally used by the profession at that time were made. No evidence of unfavorable reaction occurred until the end of the fifth week, at which time the treatment was stopped. It appears from the evidence that the treatment was administered scientifically and carefully, and that the results which followed could not have been anticipated. The treatment was proper under all of the circumstances. The unfortunate consequence was not the result of negligence.

Judgment will be for the defendants.

—*Cal. and West. Med.*

#### MEDICAL PREPAREDNESS

Only those who served as medical officers during the World War can appreciate the value of active service in the Army or Navy, not only to their country, but also to the doctors themselves. It is only the abnormal Army or Navy physician that will be a misfit in private practice, or who fails to profit by his Army experience.

The experience of active service in the Army and Navy has a training value that exceeds that gained as a hospital interne, for it embraces all branches of medical relationships and practice, especially

medical administration. The medical officer deals with all classes of men. He is their adviser in preventive medicine to a degree unknown in civil life. He examines the recruit, and prescribes the exercises and regimen that fits the weakling for strenuous duty. He supervises the sanitation of the camp, the living quarters, and the mess hall. He can enforce his advice; and the enlisted men obey him because they wish to do so in order to compete with their stronger comrades on equal terms.

When the soldier or sailor returns to civil life, he is a strong supporter of public health measures, because he appreciates their need, and the disinterested attitude of the public health officers.

Every effort is made to assign the newly commissioned medical officer to the duty for which he is already the best fitted by his experience and natural capability; but no matter what line of duty falls to his lot, he may be sure that he can capitalize his experience when he returns to private practice, or is appointed to a service in a civil hospital or public health position.

Medical service in any branch of the Army or Navy will make the doctor a better practitioner of medicine, and a better citizen in every way. The exceptions, which are comparatively few, only prove this general truth.

—*Jour. Med. Soc. N. J.*

#### POLIOMYELITIS IN FECES

The virus of infantile paralysis has been detected in human feces, both in cases of poliomyelitis and in healthy persons. The demonstration is of course complicated by the fact that feces contain a very large number of micro-organisms of many varieties, which may cause confusing symptoms. Attempts to destroy the contaminating bacteria also are apt to injure the virus. To test for polio, an animal, usually a monkey, must be inoculated with the suspected material, and the monkey can be made ill very quickly by the injection of the countless non-paralyzing organisms always present in fecal matter.

Howe and Bodian have simplified the technic of examining feces for polio by omitting all attempts to remove contaminating organisms and inoculating a lightly washed suspension of feces in distilled water intranasally into the monkey. By the intranasal route, the monkey is apparently more susceptible to poliomyelitis than to the numerous streptococci or other infectious organisms to which he is exposed. Contaminating bacteria caused few symptoms, but paralysis developed following 70 per cent of inoculations from known cases of human poliomyelitis. This route of inoculation should somewhat further simplify the search for poliomyelitis in feces of normal persons, and thus the detection of carriers.

The fact that poliomyelitis may be apparently readily contracted by the intranasal route from feces further emphasizes the possibility that the disease is filth-borne and transmissible, like typhoid, by the housefly.—*So. Med. Jo.*

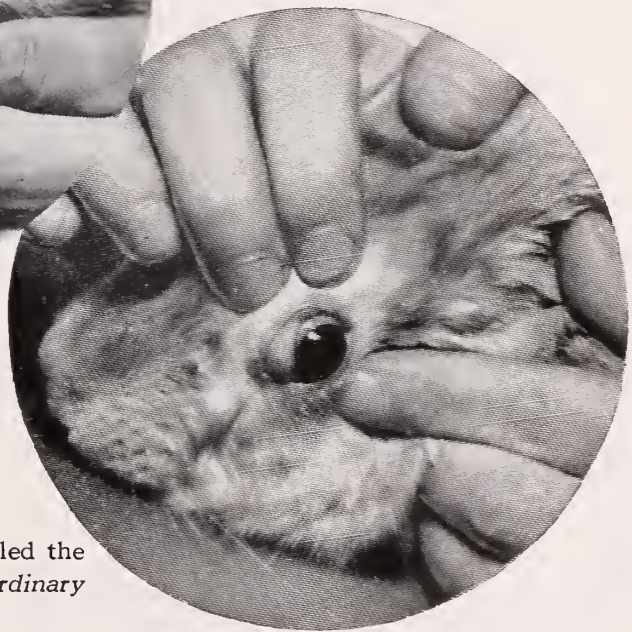


# CIGARETTE DIFFERENCES

*as shown by the rabbit-eye test*



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*From Tests Published in* \*Proc. Soc. Exp. Biol. and Med., 1934, 32, 241-245. \*\*Laryngoscope, 1935, XLV, No. 2, 149-154.

## RHEUMATOID ARTHRITIS

The clinical criteria for the diagnosis of rheumatoid arthritis would be:

(1) Some of the joints must be swollen, preferably one or more of the knuckles or the proximal interphalangeal joints of the fingers.

(2) The disease is practically always polyarticular and tends to remain in the joints already involved as it spreads to new joints.

(3) There is a strong tendency to symmetrical distribution. The fusiform finger is the most characteristic feature.

(4) There are usually slight fever, anemia, loss of weight and strength, excessive perspiration and rapid wasting of the muscles.

(5) The sedimentation rate of the red cells is practically always increased.

(6) The x-ray appearance of the bones and joints is highly characteristic. Early osteoporosis of the bones adjacent to the affected joints, then narrowing of the interarticular space and blurring of the whole joint picture. Small punched-out areas sometimes about the head of the bone adjacent to the affected joint.

(7) The agglutination test with the patient's serum against the streptococcus hemolyticus is positive in 65 to 75% of cases.

(8) In cases of years duration, characteristic ankylosis and deformity of the affected joints renders the diagnosis simple.—*Minn. Med.*

## BOOK NOTES

YOUR ALLERGY AND WHAT TO DO ABOUT IT, by Milton B. Cohen and June B. Cohen; J. B. Lippincott Company; Philadelphia, London and New York; 1940.

This medium-size book of 177 pages is written to give the sufferers from allergic maladies sufficient understanding of their troubles to seek proper medical attention and to give the desirable and necessary cooperation.

Due to the relative newness of our scientific knowledge of allergic disorders, physicians generally have not yet learned fully to appreciate the great importance and commonness of them. As a matter of fact, a considerable number of physicians tend to belittle the claims made about the allergic maladies and the necessity for their proper treatment. It is only natural that the patients, who may or may not suffer from allergic diseases, reflect the conceptions of their physicians on these subjects. This explains the need for such a book as this.

The authors have kept in mind that they are writing for laymen, and yet they have not written down to their readers. In the main the reader will have little or no difficulty in understanding the subject matter. A glossary of words which may be new to the reader is contained in the last seven or eight pages.

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The publishers display in this volume a high quality of the art of book-making.—O. H. B.

**AN INTRODUCTION TO BIOCHEMISTRY**; by William Robert Fearon, M. A., Sc. D., M. B., F. I. C., Fellow of Trinity College, Dublin, Member of the Royal Irish Academy. Pp. 475 with index. Fabrikoid. Second Edition. St. Louis, The C. V. Mosby Co., 1940.

This is a highly interesting exposition of some of the more practical aspects of the basic science of biochemistry. An abundance of diagrams and

equations aid greatly in understanding the text matter. Especially useful is the consideration in the opening chapters of the elements, their occurrence and their compounds useful to man. Little known uses are given for each element. For instance, manganese is described as being a factor in plant growth, an enzyme activator, a factor for bone development, a factor in growth and reproduction, a co-actant with vitamin B<sub>1</sub> in carbohydrate metabolism and a co-actant in the synthesis of vitamin C. As is seen, inorganic or pure chemistry is interwoven with biochemistry in the consideration of all topics throughout the book. This is one of the reasons the book is so interesting.

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As supplementary reading Professor Fearon's text book is heartily commended to the student of chemistry.

**FOOD, NUTRITION AND HEALTH:** by E. V. McCollum, Ph. D., Sc. D. and J. Ernestine Becker, M. A., Professor, and Associate, of Biochemistry, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Maryland. Pp. 127 with index. Fifth Edition, Cloth. \$1.50. Published by authors, East End Post Station, Baltimore, Maryland. 1940.

So many boobs in and out of the medical profession have managed to surround the question of diet with so much rubbish that this book comes as a refreshing exhibition of common sense. Certainly food is important to any living thing, but it is well to remember that we should eat to live and not live to eat. Researches in nutrition have proceeded apace since the latter day development of biochemistry. In this small book the authors have done a good job in summarizing much of the more important research up to date. Physicians and patients alike can benefit hugely by the reading of this book.

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<sup>1</sup> Sevringhaus, E. L., and Evans, J. S.: *Am. J. M. Sc.* 178:638, Nov. 1929.

<sup>2</sup> Novak, Emil: *Surg. Gynec. & Obst.* 70:124, Jan. 1940.

<sup>3</sup> Schneider, P. F.: *Am. J. Obst. & Gyn.* 37:861, May 1939.

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## Carcinoma of the Breast—A Surgeon's Viewpoint

E. PAYNE PALMER, M.D.

*Phoenix, Arizona*

CARCINOMA constitutes 97% of all malignancies of the breast. Two varieties predominate: scirrhus and medullary. These may be primary, or they may develop from degenerative changes in other breast lesions. Congenital abnormalities of the breast are not uncommon, and carcinoma is liable to occur in such conditions. Ductal carcinoma is presumable secondary to a benign papilloma. Residual lactation mastitis scars are precancerous conditions, and Paget's disease of the nipple will result in carcinoma of the breast unless cured. The latter cases are frequently associated with the ductal type of adenocarcinoma in the underlying mammary structure; they are of the squamous cell or epidermoid type. Bilateral involvement of the breast may be simultaneous, or at intervals two carcinomas of completely separate origin may occur. Multiple primary lesions may occur in one or both breasts. Carcinoma of the male breast is not an uncommon condition; it should be thought of whenever a tumor is seen in a male breast.

Carcinoma of the breast may occur at any age; many authors have reported cases in early childhood. There are a great number of authenticated cases which have been found in persons between 10 and 39 years of age. Nevertheless, the greatest number occurs in patients over 40, as shown by the latest Special Vital Statistics report of the Bureau of Census. For 1938 the number of deaths from carcinoma of the breast by age were as follows: 10 to 19 years, 4; 20 to 29 years, 99; 30 to 39 years, 929; 40 to 49 years, 2,460; 50 to 59 years, 3,768; 60 to 69 years, 3,598; 70 to 79 years, 2,460; 80 to 89 years, 918; 90 to 99 years, 86; 100 years and over, 3; and unknown, 7.

Cases of carcinoma of the breast are constantly increasing in number; more are dying each year as shown by this same Special Vital Statistics report. The annual deaths from cancer of the breast in the United States for a 10-year period as follows: 1929, 10,129; 1930, 10,831; 1931, 11,345; 1932, 11,803; 1933, 12,484; 1934, 13,171; 1935, 13,226; 1936, 13,708; 1937, 13,939; 1938, 14,460. Throughout this entire period, approximately 1.25% were males.

The prophylaxis of carcinoma of the breast de-

pends on the early removal of all precancerous lesions and sources of chronic irritation to the breast and nipple.

The symptoms of early carcinoma of the breast can play only a minor role in making a diagnosis; for at this stage a primary carcinoma gives no warning of its presence. A lump is usually discovered accidentally by the patient or by a physician in the course of an examination. This lump will be neither painful nor tender. Pain or tenderness do not occur until the carcinoma has advanced beyond the point where one should recognize the condition easily. Retraction of the nipple sometimes occurs quite early; fixation late. Any discharge from the nipple is always symptomatic of carcinoma of the breast and should cause suspicion.

The presence of a tumor in the breast calls for a very careful examination. In the early stage carcinoma of the breast is usually a round, discrete nodule, palpable with the flat of the hand, situated in the glandular tissue of the organ. It is freely movable with the breast tissue. One of the earliest signs of such a tumor is a shortening of the fibrous trabecular, producing a pitting or retraction of the skin over its site. This can be exaggerated by gently pinching the breast between the index finger and the thumb. If the tumor is malignant, there will be an increase in the concavity of the area. A sulcus or dimpling of the skin over the tumor may be noticed, particularly when the arm is raised. These findings are never associated with a benign breast unless there is also an inflammatory process. Dr. A. C. Scott's shadow test is quite effectual as an early sign of carcinoma of the breast; transillumination will show a definite shadow when carcinoma is present. The possibility of the co-existence of an inflammatory and malignant lesion must not be forgotten, as any inflamed area will cast a shadow. Collections of blood in the breast always produce a dense shadow.

The true nature of every doubtful breast tumor must be revealed by exploration. One should never cut out sections from breast tumors for diagnostic purpose. A tumor that is under suspicion should be widely excised without trauma to the tumor or the surrounding structure; the gross specimen should then be examined immediately by a patholo-

gist. This will result in a fairly certain diagnosis; certainly microscopic examination is the only exact way to establish the diagnosis. The routine pathological examination is dependable, but frequently a frozen section examination will have to be relied upon if the pathologist reports the presence of carcinoma in the tumor. If radical surgery should be needed, operate immediately; delayed operations are only too often fatal.

Approximately 50% of private cases and 65% of clinical groups of carcinoma of the breast that come to the operating table have axillary nodes metastasis. Patients, however, should not be denied operation because of palpable axillary nodes. They may be inflammatory. The lymphatic spread of carcinoma of the breast is through several chains, and the spread through the vessels penetrating the abdominal and chest walls is the chief cause of failures of the radical operation for carcinoma of the breast. The site of the tumor influences the spread and the rate of dissemination in various directions. Thus, growths near the midline are liable to give rise to early involvement of the parasternal nodes, mediastinum, lung and pleura; a carcinoma in the lower and inner quadrant is liable to spread to the abdomen with involvement of the liver and peritoneum. Lymphatic node involvement beyond the confines of the axillary space usually indicates extension of the disease beyond surgical removability. Metastasis may occur in widely scattered areas; carcinoma of the breast is in fact the second most common cause of skeletal metastasis. The frequent occurrence of metastasis to the upper end of the femur, pelvis, and vertebra is hard to understand; certainly it cannot be explained on a basis of lymphatic spread. Of course, it is well to remember that carcinoma of the breast is frequently spread through the blood stream.

The prognosis of carcinoma of the breast depends largely on the stage at which the patient presents herself for treatment. Those with a history of a recently discovered tumor can expect to be cured, provided it is a local lesion. With the absence of palpable axillary nodes the prospect of a cure is approximately three out of four cases; with axillary node involvement cures are reduced to one in four. This disparity does not depend upon the actual invasion of the nodes in the axilla, as these lend themselves to removal; rather, axillary lymph node involvement is an index to the extent of dissemination in other directions.

Another factor in the prognosis is the age of the patient. The controversial question of the influence of age in the growth of carcinoma has never been satisfactorily settled. No doubt youth contributes to rapid growth through an abundance of blood and lymph supply and increased cellular nutrition; on the other hand, advancing age diminishes all of these. A carcinoma grows much more rapidly when the breast is active than it will after the menopause. Because pregnancy and lactation increase cellular activity and stimulate the blood and lymph supply, they necessarily accelerate malignant extension.

The grade of malignancy is most important in the determination of the prognosis. The higher the degree of malignancy, the more rapid the spread, and the greater the percentage of cases with glandular metastasis. The best results are obtained, therefore, in the cases of lesions with a low degree of malignancy, cases of slow growth, late to metastasize. Unfortunately, highly malignant growths usually metastasize before they are discovered.

Approximately half of the patients who present themselves for examination because of a lump in the breast have carcinoma; of these about 50% are incurable. The average length of life of a patient with an untreated carcinoma of the breast is approximately 3 years after the discovery of the lesion. With treatment we can promise one in every three will be alive and well 5 years later, one in every four 10 years later. A careful survey of a large number of clinics in this country shows more of life, that 28.9% may look forward to 5 that 28.6% of their patients may expect 3 years. If treatment is delayed or neglected, mortality is 100%; it follows, then, that the sooner treatment is instituted, the better the prognosis.

The surgeon must learn when not to operate. Carcinomatous lesions of an edematous inflammatory character or of the rapidly growing anaplastic type of cellular activity will never be amenable to surgery. Extensive simultaneous bilaterality of the disease is rarely so. Carcinoma of the breast is also considered inoperable when fixed to the thoracic wall, when the lymph node involvement has extended beyond the axilla, and when distant metastasis has developed in other parts of the body.

Definite indications for surgery, on the other hand, are a freely movable tumor without extensive skin involvement, without fixed axillary lymph nodes, and no signs of further spread. When the surgeon is in doubt as to the operability of a case, Roentgen ray studies should be made of the lungs and skeletal structure, followed by a careful search for distant metastasis. Surgery then should be employed primarily for the purpose of curing the patient; however, we cannot accept for surgery only those cases with limited involvement. We must care for all to whom our surgery may render service.

Radical amputation is still the best choice in operable carcinoma of the breast. This operation permits a number of different incisions; it is understood to mean the removal in one piece of the following structure: the breast with all of the skin over and beyond the breast edges, the pectoralis major and minor muscles, the glands and gland-bearing tissue in the axilla, and the deep fascia from the clavicle to the epigastrium and from the sternum to the latissimus dorsi muscle, and the supraclavicular glands in case of involvement of this group. The use of silk ligatures and sutures will lessen the wound irritation and facilitate healing. The present surgical procedure is about as complete as can be expected; only minor development along this line can be anticipated.

Patients leaving the hospital after a radical op-



eration for carcinoma of the breast should be returned to their medical advisor for close observation over a long period of time; recurrences and metastasis may take place within the first year, or they may appear after a number of years.

### IRRADIATION

In spite of more than a quarter of a century of experimental and clinical observation on irradiation of carcinoma of the breast, there is still wide divergence of opinion on the part of radiologists, as well as of surgeons, with respect to the application of and indications for this method of treatment. Its usefulness still remains to be determined by very careful study of end results. Irradiation alone has not been generally accepted as offering curative results. Carcinoma of the breast regresses and may be held in check by irradiation over long periods, even beyond 5 years. Nevertheless, carcinoma cells still exist in approximately 75% of the breasts and 90% of the axillary nodes removed and examined after proper irradiation. The carcinoma cells show the effects of the treatment and are usually enclosed in a fibrous tissue. Carcinomatous cells in the axillary lymph nodes show less irradiation effects than the cells in the primary tumor in the breast. Ewing has found viable carcinoma cells in an area where the tumor had entirely disappeared clinically.

It must be remembered that adequate irradiation, the so-called "tolerance doses," cannot be regarded as harmless, even though not showing an immediate mortality. Pleuro-pulmonitis and fibrosis of the lungs are frequent sequelae, and when heavy irradiation is given to the axilla, lymphedema of the arm may result from the fibrosis and blocking of free lymph drainage. This, however, often follows surgical removal of the lymphatics of the axilla, and should not be wholly blamed on postoperative irradiation when radical surgery has been done.

Despite the fact that many famous surgeons do not advise irradiation as a supplementary treatment to radical surgery in carcinoma of the breast, I favor its use, believing that I have seen definite beneficial effects follow its administration.

I believe that one should be careful in the selection of the cases for the combined treatment. One cannot expect to treat all cases of carcinoma of the breast alike. Many cases are radio-resistant, and some are radio-sensitive. Each case must be given careful study; consultations should be a common practice before reaching a decision, with the combined wisdom of surgeon, radiologist, pathologist and internist applied to the problem.

Theoretically, I prefer preoperative irradiation in carcinoma of the breast. It tends to devitalize or destroy the more malignant types of cells and make the spread or transplantation of the cells less likely. The principal objections to this procedure are that it either forces the surgeon to operate when the patient's general resistance has been lowered by radiation, in case the surgery follows very soon

after the irradiation has been completed, or if the surgery is delayed for 2 or 3 months, the effects of radiation make the operation more bloody and difficult, and the likelihood of swelling of the extremity is increased.

Postoperative irradiation seems advisable in most cases where radical mastectomy is performed. It is intended to destroy any malignant cells that have escaped removal or have been transplanted during operation. To get the best effect the treatment should be started 10 days to 2 weeks after operation.

It would seem, from our present knowledge and my own experience, that the following general rules regarding irradiation give the best results:

1. Do not advise irradiation in cases where the disease is early and confined to the breast; here radical surgery alone is sufficient.

2. Cases in which the growth in the breast is of moderate size, freely movable, and where axillary nodes are involved but are freely movable, should receive radical surgery and postoperative irradiation.

3. Where the breast tumor is more advanced, fixed to the skin and the muscles, and the axillary nodes are also fixed, preoperative irradiation should be carried out judiciously, followed a month later by radical mastectomy. Postoperative irradiation to be governed by the grade of malignancy, findings at operation, and future developments.

4. Carcinoma of the breast associated with lactation or pregnancy should be given preoperative irradiation, followed in a month by radical mastectomy and postoperative irradiation.

5. Doubtful operable cases should be given the benefit of the doubt. They should receive preoperative irradiation, radical mastectomy and postoperative irradiation.

6. Since death from carcinoma of the breast is usually due to distant metastasis, I do not believe that an inoperable lesion can be converted into an operable one by irradiation, except in the case of the bulky growth too large to be controlled by irradiation. It can be devitalized and reduced in size to permit operative removal as a palliative procedure.

7. Irradiation is to be given preference over mastectomy in most cases of advanced carcinoma of the breast in which a radical mastectomy is not indicated.

8. Irradiation alone should be used in lesions that are quite large, in ulcerative lesions, in local recurrence, in skin and bone metastasis, and in all advanced cases of carcinoma of the breast.

9. Irradiation is the only hope in the many conditions found in carcinoma of the breast which are inoperable.

10. The surgeon should not hesitate to advise irradiation in those cases of carcinoma of the

breast which are inoperable because of some special condition of the patient.

SUMMARY

The known causes of carcinoma of the breast are numerous. The prophylaxis depends on the early removal of all precancerous lesions and sources of chronic irritation. Carcinoma of the breast may occur at any age; therefore, suspect carcinoma in all breast tumors, regardless of the age of the patient. A more positive attitude of mind in the diagnosis of carcinoma of the breast must be developed to secure earlier recognition of the primary lesion. The early diagnosis of carcinoma of the breast is frequently difficult. One should not wait for determining signs; rather, the surgeon should remove the tumor carefully and ask the pathologist to make the diagnosis. Microscopic examination is the only exact way to establish the diagnosis. Next to grade of malignancy, lymph node involvement is still our most reliable factor in determining the prognosis of any given case of carcinoma of the breast; this is not much different from saying that early treated cases do better than late ones. Carcinoma of the breast has an appalling mortality in spite of all scientific measures taken to prevent it. An alertness on the part of the medical profession in regard to tumors of the breast will go far toward reducing the mortality. The surgical treatment of early carcinoma of the breast offers definite prospects of a complete cure. The physician who first sees the patient with early carcinoma of the breast is largely responsible for the outcome of the case. The surgeon or roentgenologist who is called in to treat the case when the disease is advanced and hopeless possesses no technique that can possibly compensate for such fatal delay. Surgeons must know when to refuse to operate in carcinoma of the breast, as approximately half of the cases seen for the first time are incurable. There are definite indications for radical surgery when it is to be employed primarily for the purpose of curing the pa-

tient; again, surgery may be resorted to for the relief of symptoms. The failure of the radical operation to cure a majority of the cases of carcinoma of the breast is not due to any shortcomings of this method of treatment; rather, this failure is due to the fact that the majority of cases are not seen in the early stages of the disease. Irradiation in carcinoma of the breast is still in the experimental stage. Alone it has not been generally accepted as offering curative benefits. It causes a regression over a considerable period, but in the vast majority of cases does not destroy the carcinoma cells. Adequate irradiation cannot be regarded as harmless. As a supplement to radical mastectomy, irradiation has been proven to have beneficial effects on the treatment of carcinoma of the breast. One should be careful in the selection of cases for the combined treatment. Preoperative irradiation seems preferable, but because of the delay in operating, difficulties encountered at and after operation, postoperative irradiation appears advisable in most cases where radical mastectomy is performed. General rules regarding irradiation in the treatment of carcinoma of the breast are suggested.

CONCLUSIONS

One should think of the possibility of carcinoma in every breast tumor. The diagnosis in doubtful cases can only be made by exploration and microscopic examination. Radical amputation should be the choice in operable carcinoma of the breast. Definite beneficial effects follow judicious irradiating in carcinoma of the breast. A combination of good radical surgery and carefully administered irradiation produces the greatest number of cures in carcinoma of the breast. Irradiation is the only satisfactory way to produce worthwhile palliation in carcinoma of the breast.

Professional Bldg.

TABLE I.  
NUMBER OF DEATHS FROM CANCER OF THE BREAST, BY AGE, IN THE REGISTRATION STATES OF CONTINENTAL UNITED STATES—1929-1938

AGE AT DEATH	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Under 1 year		2				1		1		
1 year								1		
2 years							1			
3 years						1				
4 years					1				1	
5 to 9 years		3				1	1			
10 to 14 years			3	1	2	2	2	1	1	
15 to 19 years	7	3	4	8	2	4	3	6	1	4
20 to 24 years	17	18	12	23	17	23	14	17	12	15
25 to 29 years	55	56	57	74	72	84	87	92	85	84
30 to 34 years	206	234	239	227	261	249	229	268	260	286
35 to 39 years	516	532	574	566	601	593	655	606	638	643
40 to 44 years	810	909	989	905	1,000	1,032	1,042	1,056	1,111	1,092
45 to 49 years	1,192	1,228	1,270	1,426	1,376	1,551	1,426	1,435	1,542	1,516
50 to 54 years	1,417	1,443	1,487	1,640	1,739	1,817	1,702	1,796	1,734	1,824
55 to 59 years	1,335	1,538	1,593	1,629	1,712	1,747	1,805	1,852	1,856	1,944
60 to 64 years	1,305	1,397	1,446	1,481	1,603	1,742	1,720	1,748	1,808	1,873
65 to 69 years	1,128	1,163	1,207	1,240	1,389	1,448	1,543	1,602	1,683	1,705
70 to 74 years	841	944	1,038	1,113	1,084	1,228	1,217	1,232	1,265	1,363
75 to 79 years	624	691	689	730	830	819	912	1,043	1,008	1,097
80 to 84 years	405	394	434	420	491	498	522	562	573	643
85 to 89 years	202	205	218	220	222	230	246	281	257	275
90 to 94 years	48	57	70	75	61	73	75	79	76	76
95 to 99 years	13	6	10	18	11	18	16	19	22	10
100 years and over	2		1	2	2	1	2	5		3
Unknown	6	7	4	5	8	9	6	6	6	7



## Central Fractures of the Neck of the Femur: Treatment by Internal Fixation

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and

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A GREAT deal of confusion and misunderstanding exists regarding the physiology, mechanics, treatment and end results of fractures about the hip. Fractures of this region may be classified as (1) central or intracapsular fractures of the neck of the femur, which comprises the area from the lateral portion of the head to the lateral portion of the neck; (2) impacted fractures of the neck of the femur, in which the neck is more or less telescoped into the head; and (3) fractures of the trochanteric region, or extracapsular fractures. The last are usually oblique, passing through both trochanters, the lesser trochanter frequently being avulsed. Impacted fractures of the femoral neck and trochanteric fractures constitute 56.7% of 506 fractures of this region recently analyzed.

Immobilization of the hip in a plaster cast is sufficient to induce union and a satisfactory result in 90% of impacted fractures of the neck of the femur. Trochanteric fractures, likewise, readily unite. Reduction is easily accomplished; the bone in this region is predominantly cancellous and therefore extremely osteogenic. Further, each fragment independently has an adequate blood supply. Any undesirable sequelae, consequently, are principally of a mechanical nature, *i. e.*, shortening, a decrease in the angle between the neck and the shaft, or coxa vara deformity, or an external rotation deformity.

Central fractures of the neck of the femur present a much more difficult clinical problem. (1) Reduction must be accurate; union takes place in this region through endosteal callous formation rather than by periosteal proliferation. Moreover, as the head of the femur is deprived of the major portion of its blood supply following fractures, accurate apposition is essential to revascularization of the head. It has been demonstrated repeatedly, both by direct visualization at open reduction and by two-view roentgenograms, that accurate apposition can be obtained by either the Whitman method or the Leadbetter modification. Thus, inaccurate reduction would hardly account for the large number of cases in which the fracture fails to unite.

(2) Immobilization must be absolute. A well-fitting spica cast provides adequate immobilization grossly to maintain the position of the fragments as demonstrated by the roentgenogram; undoubtedly, however, there is a small amount of motion at the fracture site, particularly in obese individuals. This motion, which is exerted as a shearing action, must be sufficient to prevent the delicate process of reformation of the capillaries across the frac-

ture site from the neck into the head. Internal fixation provides absolute fixation, which is conducive to early repair of circulatory damage.

(3) Since an adequate supply is the most vital factor in the production of callus, a thorough knowledge of the circulation is essential to an understanding of the slow process of healing or non-union of this particular fracture. Woolcott has demonstrated, by roentgenograms and injected specimens, that, under normal conditions, the head and neck of the femur have an abundant blood supply, from three sources: (a) the artery of the ligamentum teres; (b) the nutrient artery and its branches from the trochanter, which pass upward through the cancellous portion of the neck; and (c) the capsular arteries, which are the chief source of supply. These vessels enter the neck through numerous foramina situated principally on the superior and posterior lateral surfaces one-fourth to three-fourths inch from the edge of the articular surface of the head. They traverse the remaining portion of the neck and penetrate the head, where they branch out in a fan-shaped pattern to supply the entire head. They also anastomose with the branches of the nutrient artery and with those from the ligamentum teres.

The usual fracture of the neck extends from the superior surface just distal to the edge of the articular cartilage in a downward and outward direction, completely severing the neck. The outer fragment is rotated externally and displaced upward, thus interrupting the anastomosis of vessels and depriving the femoral head of all of its blood supply, with the exception of that from the ligamentum teres. Clinical experience and roentgenograms of injected specimens have demonstrated that this small vessel is frequently not patent and is practically always incapable of maintaining the viability of the head unassisted. Slow re-establishment of vascularity across the fracture line must play a major role in non-union.

Thus, one can easily understand the extremely discouraging results obtained by such methods as sandbags, splints and traction, wherein even gross immobilization of the fragments is not assured. These measures are to be condemned, since, following their use, non-union is practically certain.

The Whitman method materially improved the previous results of treatment of these fractures, but left much to be desired. In 1934 my colleague, Dr. J. S. Speed, made a study of 100 consecutive cases of central fractures of the neck of the femur treated by the Whitman method and traced over a period of at least 2 years. This investigation was undertaken solely for the purpose of studying the

process of union in such fractures. The findings were as follows: Solid bony union with a viable head was obtained in 48%; solid bony union with a necrotic head in 4% non-union with a viable head in 17%; and non-union with a necrotic head in 31%. In other words, the results could be considered poor in 52% of the cases. To augment this dismal picture, an analysis of the whole series revealed that a mortality of 12% could be expected, and that the morbidity associated with the long confinement in a cast was relatively high. These figures compared favorably with the report of a survey made in 1929 by the American Orthopedic Association of 201 fractures from various well-known clinics throughout the country. Certainly, there was need for improvement.

During the past decade, internal fixation of central fractures of the neck of the femur has been adopted as a practically routine measure. Smith-Petersen, in 1931, initiated a revival of interest in this method of treating fractures of the hip by the demonstration that it could and did materially improve the unsatisfactory results obtained by the Whitman procedure. At that time he described a three-flanged nail which provided a maximum amount of surface contact for cohesive fixation, displaced a minimum amount of bone, and prevented rotation. Previous attempts to secure internal fixation had fallen into disrepute and been discarded, first, because of the fact that the nails and screws were mechanically inadequate to produce complete and prolonged fixation, and, second, because proper roentgenographic control to insure accurate insertion of these instruments was not available.

Various modifications of the principle of internal fixation have been introduced since Smith-Petersen reported his work in 1931, chiefly in the manner of insertion and type of screw, pin or nail. Gaenslen, Austin Moore, Knowles, Henderson, Vals, Cubbins, Thomson and others have devised methods of fixation and technics of their own and reported excellent results therefrom. Although each method seems to be dependable in the hands of those accustomed to its use, studies now being carried on through the American Academy of Orthopedic Surgeons would indicate that the Smith-Petersen nail apparently offers the best means of fixation. The objection has been offered that, technically, the insertion of a nail down the center of a hollow neck into an atrophic head provides no fixation; practically, however, this is not true. The flanged nail provides a maximum of fixation against rotary and shearing forces with a minimum displacement of bone, and the amount of metal is no greater than of multiple pins or screws.

Internal fixation not only insures osseous union in a high percentage of cases, but also materially decreases the period necessary for union to become established. Weight-bearing and walking without support is permissible after 4 to 6 months, as compared with 6 to 12 months by the Whitman method. Since the patient is not placed in a body cast, both mortality and morbidity are reduced. The

patient's position may be changed as often as advisable, and he may be allowed to sit up in bed on the day following operation; thus, untoward complications, such as hypostatic pneumonia and decubital ulcers are of less common occurrence. Residual stiffness of the joints, particularly of the knee, is prevented by routine exercises, thereby conserving function and obviating permanently restricted motion. In the majority of cases, the period of hospitalization can be reduced, if necessary, to 4 weeks. This is a considerable economic advantage to the hospital which cares for these patients in charity wards, and provides a definite saving to patients in poor financial circumstances. Even if internal fixation did not increase the percentage of cases wherein union is obtained, the measure would be thoroughly justified because of the added comfort and safety of convalescence.

Internal fixation of fractures of the femoral neck should not, however, be considered a simple procedure, to be undertaken by inexperienced hands, or even by the experienced except under proper surgical surroundings and with adequate roentgenographic control in the operating room to guide the introduction of the pins, nails or screws. Unless the fracture is accurately reduced and the nail properly inserted, as proved by two-view roentgenograms, one has a sense of false security following the operation which lends itself to poor results. The fixation slips and the outcome is no more successful than if no fixation at all had been employed.

In our clinic, internal fixation is used routinely for central fractures of the neck of the femur except in patients who are moribund upon admission to the hospital, the operation being performed as soon as feasible following the fracture. These elderly patients are never comfortable in traction or splints, every movement of the hip being painful; consequently, the longer they lie upon their backs the greater the likelihood of complications. In addition, the suffering incident to necessary movement further weakens an already debilitated condition.

The Smith-Petersen nail may be introduced under local or general anesthesia. Since this type of fracture is observed most often in old and debilitated individuals, in whom the least physiologic disturbance is undesirable, local anesthesia offers many advantages. On the other hand, some patients are uncooperative, and complete muscle relaxation necessary to reduction of the fracture cannot be secured. In such cases, a combination of local and general anesthesia may be more suitable. Recently, pentothal has been employed, and has thus far proved to be superior to other types of general anesthesia, no complications having developed post-operatively. Perhaps intravenous anesthesia will entirely supplant other types for internal fixation of fractures of the neck of the femur.

Briefly, the technic of insertion of the three-flanged nail is as follows: After reduction of the fracture, anteroposterior and lateral roentgeno-



grams are made to verify accurate alignment of the fragments, the lateral view being obtained by means of a curved cassette. Through a short lateral incision, the femur is exposed just below the line of the vastus lateralis muscle, and at a point 1 inch distal to this line a guide wire is inserted at an angle of 45 degrees to the shaft, upward through the trochanter and neck and into the head for a distance of 3 inches. Roentgenograms in both views are then repeated, and, if not in proper position, the wire is removed and reinserted until the position is correct as demonstrated by two-view roentgenograms. A Smith-Petersen nail is then threaded over the wire and driven into place. The final position of the nail and fracture are checked by an additional set of roentgenograms. Post-operatively, a short boot cast is applied to the foot and leg, into which is incorporated a horizontal wooden bar to prevent rotation. If indicated, the patient may be elevated upon a back rest immediately following operation. The position of the patient is changed at frequent intervals, care being taken to avoid adduction and external rotation of the affected hip. Ordinarily, bed rest is enforced for 2 months; this period of protection for the fracture favors the process of early revascularization of the head and promotes union. Subsequently, the patient is allowed to walk with the use of crutches, and partial weight-bearing is instituted at the fourth month. Full weight-bearing is usually delayed until the sixth month. Should there be any evidence of a poorly vascularized head at that time, weight-bearing should be further postponed; otherwise, arthritic and degenerative changes in the head are likely to occur. The nails are rarely removed in less than 1 year, and then only if they are causing symptoms.

The Smith-Petersen nail has now been employed in 115 of our patients with central fracture of the neck of the femur. The group included patients in every decade of life from the second to the ninth, both inclusive, 17% having been between 60 and 70 years of age; 36% between 70 and 80, 23% between 80 and 90, 14% between 90 and 100, and 10% in

the remaining decades. Thus, 90% of the fractures were observed in patients between the sixth and ninth decades. The mortality during the first post-operative month was 50% less than that incident to treatment by the Whitman method during the same period, having been only 5.7% in this series.

#### END RESULTS

For the analysis of the end results as to osseous union, only 59 patients were selected, this being the number who had been studied both clinically and roentgenographically for a sufficient length of time to permit solid union. Some patients did not return for examination or were not followed for the necessary period. Others had a relatively recent fracture. Of the 59 patients who qualified for the study, 86.5% had complete solid union. Of the remaining 13.5% with non-union, many were treated before the technic of the operation was sufficiently perfected for accurate insertion of the nail. In a follow-up of the 86.5% with solid union, it was found that 15.5% developed arthritis of the hip joint or aseptic necrosis of the head of the femur. Possibly this latter figure may be reduced in a subsequent series by more perfect reduction, more accurate placement of the nail, and postponement of weight-bearing until an adequate period of time has elapsed to permit proper revascularization of the femoral head.

A fair and unbiased comparison of our cases treated by various methods undoubtedly proves the superiority of internal fixation. The method must not be regarded as a panacea for this fracture, however. Because of the physiology and anatomy of the region, one cannot expect good results in every case; the law of averages demands a certain number of technical errors, despite every precaution to insure accurate reduction of the fracture and insertion of the nail. With the improvement in technic which will come from further experience with internal fixation by the Smith-Petersen nail, it appears that a higher percentage of good functional hips may be expected.

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## Treatment of Perforated Gangrenous Appendix with Spreading Peritonitis

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**B**Y A "spreading peritonitis" we mean that the process is not walled off or localized and that a large part of the peritoneum is involved. Of course, the bacterial source of the infection plays a large part in the outcome, whether streptococcic, colon bacillus pneumococcic or staphylococcic. Their mortality decreases in the order named.

Early operation is almost without mortality in any form of appendicitis. It is a moot question which is the worst, an early purge or a late opera-

tion. The purge prevents localization of the inflammatory process and keeps the omentum on the move, preventing walling-off of an abscess.

Of patients receiving an early purge, 1 out of 14 die, while only 1 out of 122 die who are not given a laxative.

Buchbinder reports that 37% of his cases operated on after the first 100 hours were ruptured, and of these 58% gave a history of purgation.

You are familiar with the condition found at autopsy. There is great distention; compression atelectasis of the lung, with a high diaphragm and

terminal pneumonia. These patients die of ileus and circulatory shock.

I will cite three examples at either extreme in the diagnostic angle. The first case—an otherwise healthy male of 67—became ill Sunday morning. He was nauseated and had abdominal cramps. His temperature and pulse were normal. The leukocyte count was 8000. A diagnosis of a mild attack of appendicitis was made. He was seen again Sunday evening. The white cell count then was 9000. He was still without temperature and his pulse rate was 90. He was not rigid and could not be made to wince on deep pressure over McBurney's point. A surgical consultant concurred in the diagnosis and felt like I did, that on account of his age and the apparent mildness of the attack and his antagonism to any surgery, that he would recover without operation. Another physician, who made the blood count, happened to be passing in the hall and I called him in. He palpated the abdomen and he expressed the opinion that the man should be operated on at once and that he had a gangrenous appendix. He talked the man into operation. Under a spinal anaesthetic, we found a gangrenous perforated appendix, with much sero-pus.

The second case was that of a man of 26, also taken ill on a Sunday. He had "stomach ache" during Saturday night following a fish dinner, and at 4 a.m. Sunday took  $\frac{1}{2}$  ounce of castor oil, which acted three or four times. He then became nauseated and had intense abdominal pain. I saw him at noon Sunday. His temperature was 99 degrees, pulse rate 84. He was tender over the left lumbar region on palpation, but had pain over the whole abdomen. He kept both thighs flexed on abdomen. His leukocyte count was 22,000. He was given  $\frac{1}{4}$  grain of morphin and seen again Sunday evening. His white cell count then was 26,000. His pain now was in the scrotum and testicles, though the whole abdomen was rigid and board-like. Microscopic examination of urine was negative. A consultant examined him and felt the trouble was due to the appendix.

Under spinal anesthesia, through a right rectus incision, we found a perforated gangrenous appendix, with much sero-pus. An examination of this fluid at operation showed a bacillus, which on culture and from the odor of the drainage afterward proved to be colon bacillus. Both of these cases were drained.

The third case was a female, age 40, seen at her home. She was apparently suffering from an attack of acute enteritis of a few hours' standing, she thought due to food poisoning. I gave her a bismuth and opium mixture, with instructions to report by telephone the following day, which she did, saying that she was much better. She added that she had a pain in her right side. I visited her, and in palpating her abdomen elicited bitter complaint when I pressed over the appendix. Her temperature was 102. We operated on her in a couple of hours, and found a perforated gangrenous appendix, with much sero-pus. This case also was drained. This patient did not have any tempera-

ture when first seen. She had not complained of any special pain or soreness in the abdomen. Her only complaint was the dysentery. Apparently she did not attach much importance to the right-sided pain on the second day, as she nearly omitted mentioning it in reporting her condition.

All diagnostic signs and symptoms fail in certain cases. Ordinarily we have general abdominal pain with rigidity and right lumbar tenderness. Later there is the board-like abdomen in beginning peritonitis. This sign may be days in appearing or may occur in a few hours.

How shall we treat these patients? If the case has been seen in the first 48 hours operation may be done at once. If seen later, when the patient is distended and dehydrated and vomiting, they should be given saline and glucose intravenously. Hot stupes to the abdomen and a Miller-Abbott or duodenal tube with suction are useful. Then, if conditions improve, they can be operated on. If they don't improve, operation is still indicated, although the outlook is not favorable.

The after-treatment includes no fluids by mouth, glucose and saline solution by vein to at least 3,000 cc. daily, or enough to allow the patient to excrete 1,500 cc. of urine in 24 hours. If veins are hard to tap, the saline or Ringer's solution may be given subcutaneously. Some advocate the constant intravenous drip, but I feel that it is wearing on an already critically ill patient to have the arm kept on a board in the one position for such a long period. I do not think that water by the rectum is a good way of introducing fluids. It is difficult to know just how much fluid is being absorbed from the rectum. Peristalsis is increased, thus tending to prevent the formation of a localized abscess. It keeps the patient irritable and upset. Giving 1,000 cc. of 10% glucose intravenously, and repeating as needed, is certainly easier on the patient. Too much saline solution should be avoided. An extra dose or two in 24 hours of 50 cc. of 50% glucose may be given for its nourishing value. This regime must be kept up from 4 to 8 days; then a dose of eserine or prostigmine followed by a "1-2-3," or alum enema, may be given. The repeated use of prostigmine is not advocated early in the treatment.

Morphin should be used freely, both for its analgesic effect and for its help to the intestinal muscle coats. A rectal tube may be inserted for a few hours, thrice in 24 hours. Hot stupes also are helpful.

The McBurney incision is the one of choice. Hernia rarely follows after drainage.

One can suture the peritoneum and leave the rest of the wound open. The question of postoperative drainage is still open. Cases seen early, even in the presence of sero-pus, may be closed entirely, or just the peritoneum closed and the McBurney incision left open or packed with vaseline gauze. Some are now trying sulfanilamide powder placed in the muscles and fascia before closing, with perhaps a little success.

The late cases should be drained. Horsley uses



a soft rubber tube and two cigarette drains. It is thought that the drainage lymph washes out sepsis. Yates has shown that it is physically and physiologically impossible to drain the peritoneal cavity for more than a few hours.

Reed and Montanes report a mortality of 9.1% in undrained cases against 16.2% for those drained.

Hertzler says that no matter which you do, "if the case turns out badly, you will then wish you had done the other." He also says the surgeon who doesn't worry about the critical case has missed his calling.

The Fowler position has been used for years, but I feel that after 48 hours any position the patient cares to assume is alright.

The ideal anaesthetic for adults is spinal. There is no postoperative nausea. No abdominal packing is required, because the intestines are collapsed.

We use 150 mg. novocaine dissolved in spinal fluid. In one case we had to resort to a second injection before securing anesthesia, and in one case we did not obtain anaesthesia even with the second injection, and then had to resort to local infiltration. The appendiceal stump is ligated without the use of clamps—the pursestring is not

used. Horsley sutures the stump to a tab of fat or omentum, in the belief that there is less risk of a fecal fistula from pressure of the drainage tube. Sponges or irrigation are not used in the peritoneal cavity, a suction tube being all that is necessary. A walled-off abscess is never broken down in a search for the appendix. If it is not readily found we put in a drain and get out. Frequent blood transfusions are life saving. Do not wait until the patient is in extremis before resorting to their use. It is now a simple procedure.

#### SUMMARY

To summarize, we treat our cases as follows:

1. Use spinal anaesthesia in adults and the McBurney incision.
2. Ligate the stump with chronic catgut without the use of clamps.
3. Use suction and not sponges in the abdomen.
4. Use a duodenal suction tube, intravenous glucose and morphine.
5. Blood transfusions before the patient is in extremis.
6. Don't worry about the bowels.

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## Diagnosis and Treatment of Peptic Ulcer with a Special Note on Gastrosocopy\*

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THE manifold activities of this modern age tend to produce nervous irritability and other abnormalities which contribute to disease in general and to digestive disorders in particular. For that reason "dyspeptic unhappiness" is a frequent malady of our present civilization. It is most important, however, to distinguish between dyspepsia of nervous origin and dyspepsia of organic origin. Dyspepsia in early life, under 30 years of age, is rarely serious. After that age, from 40 to 50% of all cases of dyspepsia, in both men and women, are due to peptic ulcer, cholecystic disease, or malignancy of the digestive tract or accessory organs.

Dyspepsia, therefore, must not be ignored, and the medical profession has a serious responsibility in educating the public in that belief, and in training them to seek advice concerning it from physicians and not, as is the present habit, via newspapers, magazines and the radio. In this respect the general practitioner in the city, and in the rural districts even more, is a real guardian of public health.

Peptic ulcer, which I have selected for the subject of this discussion, is a very common disease which has given rise to a great deal of controversy.

Its origin is still unknown, its tendency to slow healing is a puzzling phenomenon, and whether medical or surgical treatment is preferable remains a matter of debate. The practitioner is further confused by the manufacturers' ingenuity, out of which new remedies are constantly born. Fogelson's<sup>1</sup> dismay that "one thousand new articles on gastroduodenal ulceration appear yearly in the literature" is supported by Moynihan's<sup>2</sup> wise words concerning this literary output, "Unhappily its value is by no means proportionate to its bulk." Into this confused field I am stepping and am endeavoring to present a clear, concise and simple view of the subject abstracted from the textbook of experience.

#### ETIOLOGY

There are certain proven basic facts concerning peptic ulcer which should preface this discussion. Schwartz,<sup>3</sup> in 1910, enunciated a dictum, "no acid—no ulcer," which still holds true. Ulcer cannot develop as long as the physiologic resistance of the tissue cells is normal. The answer to the question as to why the stomach does not digest itself is found in this physiologic axiom. My own definition of a peptic ulcer would be that it is a self-digestion of a part whose inherent self-protection is weakened or lost. The essential elements of protection are threefold: a normal, adequate blood supply, a normal and regular flow of nervous en-

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ergy, and a normal coat of mucus. Bearing in mind these essential facts, we can now approach our next subject, the etiologic factors which break down the normal forces of self-protection.

As Ochsner's group has pointed out,<sup>4</sup> ulceration is merely a symptom of a generalized disorder, and the results of therapy will be unsuccessful unless the underlying factors responsible for the predominating symptoms are corrected. Other theories, many of which are based on what seem to be conclusive experimental data, include: constitutional makeup; focal infection; neurogenic factors; the inherent defense and healing properties of the organism; the influence of hot and cold food; irritation from the use of alcohol and tobacco; over-indulgence in food; capillary stasis of the gastric mucosa followed by erosion; toxic, climatic and radical causes; local vascular disease; arteriosclerosis; thrombosis and embolism; excessive carbohydrate and inadequate vitamin content of the diet; mechanical disturbances of the stomach; pylorospasticity leading to local necrosis; disproportion between the acidity and alkalinity of the gastric and duodenal juices; a deficiency of antipepsin; food allergy; the erosive action of the gastric juice. The acid-erosion theory, which is so staunchly supported by Sippy, also finds among its supporters such outstanding figures as Hurst and Stewart, Ivy and Dragstedt, and Mann.

The whole formidable array of possible factors, according to Ochsner, can be discussed under two general headings, controllable or precipitating and uncontrollable. Examples of the first type of factor are hyperacidity, hypersecretion, focal infection, and similar causes, while tissue susceptibility, constitutional predisposition and neurogenic factors belong in the uncontrollable category.

To speak figuratively, the soil must be prepared, the attack follows, and finally the "ulcer child" is born. The natural forces or repair crew can handle the acute ulcer, whose life is predestined to be short. The chronic ulcer, however, remains a problem, a thorn in the side of the host, stubborn and unyielding from the standpoint of the physician, and a money-maker for the drug manufacturers. On the other hand, stubborn chronicity is not always inherent in the ulcer; it frequently is the fruit of delayed diagnosis and poor management. My own advice, based on my own experience, is to establish early and definitely the guilt of the ulcer, and then to deal properly and adequately with the culprit.

Peptic ulcer, as has already been pointed out, is a very common disease. It occurs in all races, in all trades and professions, and among the unemployed, of both the voluntary and the involuntary types. It affects all ages, and has been known to occur even in newborn infants, although the incidence is greatest in the third, fourth and fifth decades of life. It is more frequent in the male, but the type associated with hour-glass deformity is more frequent in the female. Duodenal ulcer is more common than gastric ulcer, jejunal ulcer is frequent, and esophageal ulcer is rare.

Ulcer may complicate other diseases. It very seldom occurs in combination with achlorhydria.

### PATHOLOGY

Both pathologically and clinically, ulcer is an erosive lesion. It originates in the superficial layers of the mucosa, gradually penetrates through the muscularis, and sometimes perforates the wall of the organ, leading to acute perforation, or, if a blood vessel lies in its path, to massive hemorrhage.

The ulcerative process, as has been pointed out, is essentially a self-digestion of the part by the acid gastric juice. Acid is the *sine qua non* for the production and perpetuation of the lesion. The partner in the crime, pepsin, can produce its act of dissolving tissue only in the presence of acid, not by itself. Dragstedt's<sup>5</sup> suggestion that the lesion be termed acid ulcer rather than peptic ulcer is based on this fact, and in my opinion is an excellent one, for the name appropriately explains the occurrence of ulcer in the parts of the digestive tract exposed to acid gastric juice.

The initial erosion is often caused by a capillary hemorrhage with resulting necrosis. My own gastroscopic experience agrees in this regard with the findings reported by Rogers and Jones.<sup>6</sup> What produces the capillary rupture, however, is a problem still to be solved. I am convinced that vitamin deficiency plays some part. Increase in capillary permeability is being investigated as a cause. Whether gastritis is a forerunner of the ulcer, or a consequence of it, is still a subject for debate. Konjetzny<sup>7</sup> states that a certain amount of gastritis is invariably present with ulcer, but gastroscopists are not in complete agreement on this point. Schindler<sup>8</sup> considers ulcer and gastritis independent of each other. Be this as it may, it is clear that peptic ulcer is a penetrating lesion which is initiated by some one of the many factors which have been listed.

### SYMPTOMATOLOGY

Although ulcer distress is characterized by chronicity and periodicity, the symptoms, unfortunately, are not always clear-cut, and the definite classical pattern is not always present. Crohn<sup>9</sup> writes, "The recital of the clinical course of an ulcer patient varies greatly according to the pain-sensitivity of continuous symptoms; the normally sensitive allows us to plot a curve of the ulcer activity; and the sub-sensitive or insensitive does not complain until it is almost too late."

I remember most vividly a patient in the insensitive group. A fisherman, in extremely serious condition, was brought to my office, and on the basis of the findings I diagnosed perforation of a peptic ulcer, which was confirmed by immediate exploratory laparotomy. His history had revealed no chronic digestive trouble except that, after close questioning, he said that he was uncomfortable if he drank coffee. Some hours before I saw him, while he was out on the Gulf, he had drunk some coffee and soon afterward felt as though something had ruptured in his abdomen. Evidently this was



a hyposensitive individual who had a chronic ulcer, but who, because of his lack of sensitivity, experienced only minimal discomfort from it.

It would be well to classify all cases of ulcer in two main groups, the definite classical pattern and the atypical type, which is bizarre, puzzling and difficult to analyze and evaluate. In the classical group there is at first vague, dyspepsia-like distress, which is unrelated to diet or activities. Later the discomfort turns into pain, which appears at definite times. It is usually dull, gnawing, burning or aching in character. It is usually localized in a small portion of the epigastrium, or involves the whole epigastrium. Only rarely does it extend below the umbilicus or radiate to the costal borders or back.

The time of onset varies. It may develop immediately after food is taken, or from 1 to 3 hours later. Sometimes it manifests itself as a typical hunger pain, occurring on an empty stomach and being relieved by food. Moynihan spoke of the rhythm of the pain and said that the gastric rhythm is "food, comfort, pain, comfort," while the duodenal rhythm is "food, comfort, pain." Vomiting, nausea, flatulence, bloating, belching, malaise, headache, weakness and other symptoms may or may not accompany the characteristic pain. Symptoms may continue for months, with clock-like regularity, then may disappear with treatment or without it, but, like a tax collector, the disturbance always returns.

The location of the ulcer frequently gives rise to suggestive characteristics. In ulcers located near the cardiac end of the stomach pain tends to occur immediately after the ingestion of food, and there may be a distinct cardiospasm (dysphagia). In ulcers located on the posterior gastric wall, which are often associated with pancreatic adhesions, the pain may be referred to the lower dorsal or upper lumbar region. In ulcers located at the pylorus the pains are usually cramping in character, due to pylorospasm, often causing the patient to double up as soon as he has taken food. The pain is located in the mid-epigastrium, with radiation toward both hypochondriac regions. It is often relieved by heat. Fear of taking food (sitophobia) sometimes results in loss of weight, in any type of gastric ulcer.

In duodenal ulcer the pain tends to occur later than in gastric ulcer, sometimes not until 2 or 3 hours after a meal. Food relieves the distress, and the patient therefore eats at frequent intervals and thus gains in weight. So-called fasting pains come on at night and are relieved by milk and crackers, and by soda bicarbonates. The pain of duodenal ulcer is usually situated to the right of the mid-epigastric line.

Posture occasionally relieves the pain of gastric ulcer. Relief from pain of an ulcer on the posterior gastric wall may be obtained by lying on the abdomen, and the pain of a pyloric ulcer may be lessened by the assumption of the left lateral position, as well as by the application of heat. The pain of gastric ulcer is also frequently relieved by

spontaneous vomiting. Persistent vomiting, however, should make one suspect pyloric obstruction, as the result of edema, spasm of the pyloric sphincter, contracted scar tissue, or, if the symptoms and signs justify the assumption, malignant infiltration.

In the aged senile atrophy and contracture of the pyloric sphincter can occur in the absence of malignancy, adhesions or the scar from a previous ulcer. I believe that this type of pathology has not been sufficiently emphasized, as the following case proves:

A male patient, 68 years of age, consulted me for persistent vomiting, loss of weight, weakness and exhaustion. There was no history of previous digestive upsets. I suspected pyloric obstruction, and made up my mind that it was due to a possible malignant infiltrating pyloric lesion. Physical examination revealed no painful abdominal area, no palpable mass, no glandular adenopathy. The abdomen was flabby and relaxed, which suggested a possible gastric atony and ptosis, perhaps causing a sharp bend at the pyloroduodenal junction. Laboratory tests revealed a normal gastric acidity, a hypochromic iron deficiency anemia, normal blood chemistry for an individual of this age, and satisfactory kidney function. Roentgenologic examination of the gastrointestinal tract with an opaque substance revealed a dilated and ptotic stomach, with no evidence of a definite lesion, though the pyloric sphincter was narrow, resulting in a 24-hour gastric retention.

The first attempt at medical treatment was amazingly successful, though short-lived. The patient was kept in bed, with the foot elevated 6 inches, for 2 weeks. He was given a bland, high caloric and high vitamin diet, as well as liver and iron. Under this therapy he improved in weight, the vomiting ceased, the blood picture returned to normal, and he was able to resume his law practice.

At the end of 6 months the vomiting, with all its associated symptoms, returned. Home treatment was without avail and the patient became weak and emaciated. When I saw him, several months later, he weighed only 82 pounds. Surgery was recommended, and exploratory laparotomy revealed no malignancy and no sign of scar, adhesions or ulcer, but instead a senile atrophy and contraction of the sphincter. A biopsied specimen of tissue was reported as negative for malignancy.

The patient made an uneventful recovery and once more returned to his practice of law. In this case gastroscopic examination would have been helpful, but his weakened condition on the second visit made it inadvisable. Another similar case has recently come under my observation.

It is in the second or atypical group of ulcer cases that we often meet our Waterloo. In many such cases to which the physician has applied the label of "neuro" the surgeon has demonstrated an ulcer. The symptomatology is atypical; apparently neurotic symptoms form the frame of the picture, and the x-ray report is the familiar "No gastrointestinal pathology demonstrated." We must bear

in mind, in handling such cases, that early, shallow and superficial ulcers cannot be visualized by roentgenologic examination.

In this type of ulcer the gastroscopic examination is of the greatest possible value. In my own gastroscopic studies. I have frequently demonstrated the presence of one or two, and sometimes even of three or four shallow gastric ulcers when the radiologist's report has been negative. The gastroscope, unfortunately, is of little value in duodenal ulcers, in which the x-ray is of the greatest help.

The differentiation between gastric and duodenal ulcers on the basis of history and physical examination alone is correct in hardly 50% of the cases. Here, again, a careful study by x-ray is of the greatest value.

### DIAGNOSIS

My personal diagnostic criteria may be expressed about as follows: A good history is essential. Tenderness or localized pain on physical examination in both the recumbent and upright positions is corroborative. High gastric acidity may be present but is not essential. Achlorhydria can occur with evidence of gastric ulcer, but is very seldom present in duodenal ulcer. A radiologic demonstration of a deformity of the duodenal cap in a case of achylia gastrica usually denotes duodenal adhesions rather than ulcer.

Occult blood in the gastric contents is important; it means that a source of bleeding is present. If the blood is constantly present it may spell malignancy, even in a very young subject. Hematemesis and melena are factors which must be carefully weighed. Persistent vomiting, especially of the vomitus consists of food eaten the previous day, means partial or complete pyloric obstruction.

Roentgenologically a gastric ulcer can be identified by a niche, a punched out area, a V-shaped or other deformity, alteration of normal peristaltic waves, and an area of opacity, due to greater concentration of barium in the crater. An hour-glass deformity is sometimes observed and is always of importance. Careful fluoroscopic examination is of the utmost value.

### GASTROSCOPY

Gastroscopy is now sufficiently well recognized to be a routine method of examination of the stomach. It ranks with radiology; it is not superior or inferior to it, but it is absolutely indispensable. This is the opinion of Duval<sup>10</sup> of the University of Paris.

Gastroscopy is not only of value in confirming the radiologic diagnosis of gastric ulcer; it also not infrequently demonstrates lesions not seen by the x-ray. In a personal series of 50 recent cases, the ulcer was seen by both roentgenologic and gastroscopic examination in 38. In six cases roentgenologic examination was negative, but shallow, superficial lesions were seen gastroscopically, and in six other cases lesions were seen roentgenologically which were not visible gastroscopically. It is clear that the two methods supplement each other.

Gastroscopy is of equal value in studying cases treated by gastroenterostomy. Four such cases were examined by gastroscopy and roentgenology. In one the x-ray was negative, but gastroscopy showed a marked hypertrophic erosive gastritis with hemorrhage. One was absolutely free of any sort of lesion by both methods. In one the stoma could not be located gastroscopically. The fourth case was negative by x-ray, but gastroscopically there was present a shallow marginal hematoma.

In the usual case of ulcer the accompanying changes in the mucosa can readily be visualized by gastroscopy, and this method is far superior to the x-ray for studying the stages of healing of a gastric ulcer. Gastroscopy is also useful in differentiating malignant from benign ulcer, though clinical and laboratory methods must also be employed. The benign ulcer is usually crater-like. The floor is whitish-yellow and after an acute hemorrhage is occasionally brownish or dark red. The edges are sharp or partly undermined. The adjacent mucosa may be normal or inflamed and converging folds may be seen. The carcinomatous ulcer has less sharp edges and the ulcer floor blends with the mucosa. The color, more frequently than in the benign ulcer, is brown, brownish-red, violet, gray, or dirty-looking. The entire ulcer lies on an elevation and the adjacent mucosa may be nodular.

I recently had the experience of studying by gastroscopy the stomach of a middle-aged female who complained of gastric disturbances. Roentgenologic examination showed on the greater curvature near the antral chamber a pouched-out area with irregular indentations suggestive of malignancy. The radiologist suggested a gastroscopic study, by which the antrum and pylorus were easily located. The antral mucosa appeared normal. The function of the sphincter was somewhat sluggish, probably due to the atropine which had been given. In the preantral area on the greater curvature a small hemorrhagic area, about the size of a large pea, was visible, and not far from this area was a second similar lesion. In this double ulcer area the mucosa on the posterior wall was somewhat hypertrophic but not infiltrated. At no area in the pars media was there any evidence of malignant infiltration. The cardiac area was normal at depth three. The cooperation of the patient was excellent and perfect visualization was obtained gastroscopically. The evidence was in favor of ulcer against malignancy.

Many other pathologic conditions may be the cause of epigastric pain and may mimic peptic ulcer. They include coronary thrombosis; tabetic crises; syphilis of the stomach or peptic ulcer in a luetic subject; reflex pylorospasm due to appendicitis or gallbladder disease; uremic ulcer or purpura; postprandial pain and epigastric tenderness caused by an enlarged left lobe of the liver in myocardial insufficiency; pulmonary tuberculosis, which not infrequently begins with gastric symptoms; aneurysm of the abdominal aorta; epigastric hernia; pancreatic disease. In all of these conditions there is time for careful differential diagnosis with



one exception, coronary thrombosis, which may simulate the picture of a perforated gastric ulcer. In coronary thrombosis the blood pressure drops and rales present at the pulmonary bases. In perforated ulcer a previous history of digestive disturbances is obtained, there is marked rigidity of the recti muscles, shock is present, and the pneumoperitoneum (which can be demonstrated by x-ray) produces shoulder pain and diaphragmatic irritation.

### THERAPY

Turning to therapy, we meet the great stumbling block in the problem of peptic ulcer. Internists and surgeons have devised many plans of management, no one of which is perfect. Much has been done, but a great deal remains to be done before peptic ulcer can be classified as a curable disease.

Before any peptic ulcer is treated, the host must be classified, the possible factors involved must be evaluated, and the location of the lesion must be recollected. A gastric ulcer has malignant potentialities; a duodenal ulcer seems immune to malignant degeneration. The late Charles Mayo once remarked that he never operated on a duodenal ulcer until it was cured nine times medically.

The rule should be to treat the individual first and the lesion second, since some ulcers have a constitutional origin. The forces of repair have a better chance to bridge the gap when the constitutional equilibrium has been established. The mass type of treatment is never satisfactory.

The ambulatory form of treatment should be discouraged. Rest of both mind and body is essential in the treatment of an ulcer. Starvation diets should be avoided and none of the so-called injection treatments is likely to be very reliable.

The aims of ulcer therapy are: (1) Elimination and control of the factors considered responsible for the development and maintenance of the lesion. (2) Assistance in the process of regeneration by which new cells fill the gap left by the ulceration. (3) Maintenance of body nutrition. (4) Prevention of complications. (5) Facilitating the gastric and duodenal functions in the process of digestion. How can these objectives best be accomplished? By rest of the whole body, and, in particular the stomach; by neutralizing of excessive gastric acidity; by removal of stagnant gastric contents night and morning; by elimination of all foci of infection.

My own opinion, bearing these essential aims in mind, is that even the mildest case of ulcer demands a rest in bed of at least 7 to 10 days before the ambulatory plan of treatment is instituted. In moderately severe or stubborn chronic cases the rest must last 4 to 6 weeks. Application of heat or cold to the epigastrium is not essential, but has a soothing physical effect and the additional psychological effect of impressing the patient with the necessity of resting in bed.

The diet must have three qualities: It must not excite the production of hydrochloric acid. It must have a high combining power with hydrochloric acid. It must leave the stomach rapidly and must

have no residue. The diet for a patient with a non-hemorrhagic and non-obstructive ulcer should consist of 1 quart of milk, 4 eggs, 8 ounces of cream, and 1 ounce of lactose, which should be kept cold. Cream must be eliminated if the patient has a fat intolerance. To this diet, which amounts to approximately 1,500 calories per day, vitamins are added, vitamin C being of particular value in minimizing and relieving submucosal bleeding. Three ounces of the mixture are given each hour during the day from 7 a.m. to 7 p.m. Two feedings at night are sometimes given also. During the first week gastric lavage is practiced between 9 and 10 p.m.

During the second week of treatment fine gruels, custards, butter, pureed or creamed vegetables, cocoa, gelatin and milk toast are added. At the beginning of the third week scraped or minced beef, lamb chops or stewed fruit may be given. Thereafter the diet is gradually increased and is varied to suit the individual taste. For many months, or possibly a year, coarse food, spices, condiments, coffee, alcohol and tobacco are prohibited. Every patient, in addition, must be instructed to lead a mode of life suitable to his ulcer.

As to drugs, I personally use antispasmodics before meals, with colloidal aluminum hydroxide preparations three to six times daily after meals. I resort to alkalies only in occasional cases. Anemia is treated with iron salts and secondary liver fraction therapy, which is often employed parenterally. Regulation of the bowels is accomplished by mineral oil, flushes, and similar simple measures. I have tried in a number of cases mucin, injection therapy, and the drip method of treatment, but have never been impressed by their great or essential merit.

If no improvement follows the plan of treatment outlined after a reasonable lapse of time, I assume either that my diagnosis is incorrect or that I am dealing with a calloused or carcinomatous ulcer. The patient is given another roentgenologic examination and gastroscopy is employed. The findings determine the subsequent treatment.

The possible tragic consequences of peptic ulcer include perforation, hemorrhage, pyloric obstruction and carcinomatous degeneration. To avert these consequences constant vigilance is necessary. The solution of the problem lies in early recognition and intelligent management.

Emergencies are met as they arise. Malignant degeneration, obstruction and perforation belong to the surgeon. On the other hand, I seldom place a bleeding ulcer either readily or cheerfully on the altar of surgery. My plan of attack in that emergency consists of morphia by hypodermic, ice bags, the Levin tube for continuous gastric drainage, blood transfusions, and the administration of soft food as early as is feasible.

This plan of management is naturally not a panacea for all cases. There are always exceptions, and modifications of the regimen are often of more value than strict adherence to it. This is so obvious that I need not burden you with statistics. It

be said, however, that the successes and failures of internists and surgeons can be proven only by an impartial follow-up, lasting from one to several years and based not only on careful history and physical examination but on the confirmatory evidence of radiologist and gastroscopist. That all statistical studies meet these requirements I seriously doubt.

In concluding my remarks, I again quote the words of Crohn: "To cure an ulcer under a given type of treatment that is based on rest and diet is an easy matter; to perpetuate that result is the problem. Recurrences are prone to follow sooner or later. Like the obstetric patient, few persons can long remember the distressed days and painful night of ulcer activity." The aphorism of a past generation, "Once an ulcer, always an ulcer," is probably not inept. Barr<sup>11</sup> modifies it, "Once an ulcer, always a possible ulcer." In the light of our present knowledge of ulcer management, we must agree with him.

As to x-ray therapy for ulcer, I have had no personal experience with it, and the literature seems to make it of only academic interest. Barr states, "There is no reason to expect that irradiation of an ulcer, *per se*, will promote connective tissue or submucosal proliferation and healing."

The complications and therapy of peptic ulcer have necessarily been touched upon only casually in this paper. The general therapeutics is well known to most physicians and is described in the better textbooks. A quotation from Ryle<sup>12</sup> will guide any physician who has a patient with a peptic ulcer under his care:

"All surgeons and physicians who are handling this troublesome disease must always remember

that they are not, in fact, concerned with gastric or duodenal ulcer, the lesion, but with the ulcer, the disease, as it occurs and as it varies in individuals of a special type and temper and differing daily circumstances. In each case, briefly, judgment must be based not only upon the presence of the ulcer but upon a proper understanding of the whole patient and the whole disease."

To that statement I may add one of my own:<sup>13</sup> "When the Great Master will alter the present status of life in a most restless universe, then only will the human genius conceive a perfect scheme for control or cure of the much dreaded affliction, gastric and duodenal ulcer."

150 Baronne St.

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## Food Poisoning Due to Aerobacter Cloacae

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**A** BANANA pie that was manufactured by a Tucson baker was purchased by a resident of Nogales, Arizona, on the afternoon of June 20, 1937. Small portions of the pie were consumed by the Nogales resident and her husband; the husband ate a larger portion than the wife.

Within 2½ hours after the ingestion of the pie, the husband was awakened by a terrible nausea, which was followed by frequent violent vomiting, which lasted about 2 hours, when severe abdominal cramps appeared, followed by profuse watery diarrhea. The cramps and diarrhea lasted about 6 hours. The patient had approximately 30 bowel movements during this time.

The wife became ill about 45 minutes after the

husband. She had exactly the same train of symptoms as the husband, but was not as violently ill. Both patients were weak 7 days later. Although they were hungry, they had no appetite because all food tasted flat.

After a study of their diet, the banana pie came under suspicion. A small portion remained, which was sent to the Arizona State Laboratory.

Microscopic examination of smears prepared from the pie revealed the presence of large numbers of Gram negative bacilli in the custard filling. Portions of the custard filling were used to inoculate tubes of lactose broth and plates of nutrient and eosine-methylene blue agar. After 16 hours there was no gas in the lactose broth, and the predom-



inant organisms were colorless colonies of Gram negative bacilli or eosine-methylene blue agar. Few other colonies were observed.

Several typical colonies were inoculated into culture media and the cultures were incubated at 37 degrees C. After 24 hours, acid and gas were present in the following carbohydrates: mannitol, salicin, xylose, galactose, dextrose, rhamnose, levulose and sucrose. The bacteria were motile. At the end of 5 days gelatin had not been liquified, litmus milk was alkaline and there had been no action on lactose and inulin. Indol was not formed.

Attempts to classify these organisms according to Bergey<sup>1</sup> placed them in the genus *Proteus*, and, in general, the cultural characteristics agreed fairly well with those of *Proteus asiaticus*, although agreement was not complete.

These bacteria were not agglutinated by anti-typhoid, anti-paratyphoid (A and B) and anti-dysentery (polyvalent) serum. Other antisera were not available.

Blood specimens were secured from the patients on the second day of illness. Blood cultures were negative. The patients' sera did not agglutinate the antigens of typhoid ("H" and "O") or paratyphoid (A and B). The sera did not agglutinate the organisms which had been isolated from the pie.

Several weeks later a stool specimen was submitted for a patient who lived in another part of Arizona. This patient, who had not been connected in any manner with the two cases just mentioned, had been ill for several weeks. A tentative diagnosis of typhoid had been made, but blood cultures were negative and the serum of this patient did not agglutinate the antigens of typhoid ("H" and "O") or paratyphoid (A and B). Bacteria were isolated from the stool of this patient which were culturally identical to those which had been isolated from the banana pie. Serum from this patient agglutinated, in high titers, the organisms which had been isolated from his own stool and those which had been isolated from the banana pie.

In order to determine to what extent these agglutinins might occur normally, a series of approximately 50 sera were selected from specimens which had been submitted to our laboratory. All of these specimens had been submitted for the laboratory diagnosis of syphilis, consequently there was no suspicion of enteric infection at the time the specimens were taken. None of these sera agglutinated the bacteria which had been isolated from the patient or from the banana pie. This would indicate that agglutinins were not common for the bacteria which we had tentatively identified as *Proteus asiaticus*.

Some time later, an article by Alves<sup>2</sup> came to our attention, in which it was stated that *Proteus asiaticus* is probably a late lactose fermenting strain of *Escherichia coli*.

These cultures were then referred to Mr. Carl Prince, who at that time was engaged in a study of late-lactose fermenters. The results are:\*

Acid and gas present in the following sugars after 24 hours at 37 degrees C.: dextrose, sucrose, maltose, mannitol, xylose, arabinose, trehalose and raffinose.

Inositol and dulcitol became alkaline. Acid and gas were not produced after 30 days.

Acid and gas were produced in salicin after 48 hours.

Litmus milk was slightly acid after 3 days and was coagulated at 10 days.

Gelatin was slowly liquefied after 10 days. Liquefaction was crateriform, becoming stratiform.

Starch was not hydrolyzed, indol was not formed, nitrates were reduced to nitrites. The production of H<sub>2</sub>S was questionable.

Lactose was alkaline, but acid and gas appeared after 5 to 10 days. The methyl red test was negative, and the V-P test was positive.

The production of acid and gas from lactose removed these organisms from the genus *Proteus*. According to the fifth edition of Bergey<sup>3</sup> they were placed in the family Enterobacteriaceae, Tribe I, Escherichiae. Since the methyl red test was negative and the Voges-Proskauer test was positive, they were placed in the genus *Aerobacter*, and were identified as *Aerobacter cloacae*.

According to Tanner,<sup>4</sup> *Aerobacter cloacae* has not been frequently incriminated in outbreaks of food poisoning. Buchanan and Megraill<sup>5</sup> reported two outbreaks of food poisoning caused by custard puffs. The causative organisms were tentatively identified as *Proteus vulgaris*, but it was noted that the cultures fermented lactose by the fourth or fifth day. The organisms were subsequently identified as *Aerobacter cloacae*. They point out that some of the outbreaks attributed to the genus *Proteus* may have been due to late lactose fermenting organisms, and this was probably overlooked because investigators did not carry their cultures long enough to detect the delayed fermentation of lactose.

Gilbert, Coleman and Laviano<sup>6</sup> studied an outbreak of gastroenteritis in which some 125 persons were involved. They proved that cream puffs and chocolate eclairs were responsible and they isolated bacteria of the cloacae-aerogenes group, which produced growth products which were toxic for experimental animals.

The symptoms described by Gilbert<sup>6</sup> were practically identical to those of our patients who ate the banana pie. Gilbert mentions that in the outbreak which she studied, some of the persons who ate the pastry noted a metallic or gaseous taste. One of our patients mentioned a metallic taste, and at the time the pie was submitted tests for chemical poisons were made. All tests were negative.

Although laboratory facilities did not permit further study of the organisms which were isolated from the pie, in view of the reports cited above, it seems that the illness was caused by *Aerobacter cloacae*. These organisms are not usually considered as pathogens, but these experiences, and the fact that we frequently isolate them in cases of

\* We are indebted to Dr. Mary E. Caldwell and Mr. Carl Prince for these results.

enteric infections, strongly suggest the possibility that at times they may be pathogenic.

The absence of agglutinins in the sera of the patients who ate the banana pie may be due to the fact that the specimens were secured before the appearance of agglutinins. In view of Gilbert's investigation, however, it appears that illness may be due to a toxic product of *Aerobacter cloacae*. In this case, agglutinins for *Aerobacter cloacae* would probably not be produced. The patient whose sera did agglutinate these cultures of *Aerobacter cloacae* had been ill for several weeks, so there had been sufficient time for the production of antibodies.

An inspection of the bakery showed that it was clean, and that equipment was maintained in a very sanitary condition; no objectionable practices were observed. An interesting observation is that although the incriminated pie was one of a large number produced at the same time, no other cases of food poisoning were reported.

Bacteria suspected as enteric pathogens are frequently isolated, but in many cases identification is not made. The common enteric pathogens do not ferment lactose, so delayed lactose formation will result in an incorrect classification. Jordan<sup>7</sup> has stated that "late" or "slow" lactose fermenters "... instead of fermentation lactose promptly (24 hours) show no production of acid and gas until after 4 to 7 days or longer. These late lactose fermenters, if cultures are not incubated for a sufficiently long period, may, on a preliminary examination, resemble the non-lactose fermenting *Salmonella*, and in hasty work are sometimes mistaken for the latter. Like other members of the large coli group, the late lactose fermenters have some patho-

genic power and have been found associated with various pathologic conditions."

In many cases, the extension of the incubation period and the employment of more extensive methods would result in the detection of slow lactose fermenters. The probability of correct identifications should be greatly increased, which, in turn, might result in valuable contributions to our present conflicting knowledge of the pathogenic powers of late lactose fermenters.

### SUMMARY

Organisms were isolated from a banana pie which was suspected as being responsible for two cases of food poisoning.

These organisms had been tentatively identified as *Proteus asiaticus*, but further investigation revealed that they produced acid and gas from lactose after 5 to 10 days. The bacteria were identified as *Aerobacter cloacae*.

The significance of late lactose fermentation is briefly discussed.

\* Arizona State Laboratory, Tucson, Arizona.

\*\* Gebler Building, Nogales, Arizona.

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## Narcolepsy

### (Case Report)

JOHN W. MYERS, M.D.

*Albuquerque, New Mexico*

**N**ARCOLEPSY or Gelineau's syndrome, so-called because it was early described by this man, is felt by Adie to be a definite disease entity. On the other hand, Wilson<sup>1</sup> looks upon it as simply a disturbance in sleep rhythm and no more a disease entity than epilepsy. In any case, we may look upon it as a definite syndrome characterized by transient attacks of brief sleep and transient attacks of loss of muscular tone, following an emotional situation, causing the patient to slump to the floor without loss of consciousness.

The literature was summarized in 1934 by Daniels,<sup>2</sup> who added several cases to those previously reported. Of 36 cases reported, 30 were males and 6 females. Wilson classified the narcolepsies as follows: (1) recurring attacks of sleep during the day, with or without attacks of tonelessness; (2) attacks of sleep of longer duration, the day and night sleep merging together, or continuous sleep.

The patient typically has a sleepy look and exhibits a certain inertia. If let alone during the day he will fall asleep for varying periods of time; however, he is usually able to carry on at some sort of active work. Some patients have been described who sleep standing up or while walking along the street, awakening when they come to the curb. The sleep may be abrupt in onset without the usual feeling of sleepiness which precedes normal sleep. They rarely injure themselves in the cataplectic attacks. Some patients experience attacks of morbid hunger. The attacks of tonelessness usually follows some emotion such as amusement, laughter, fright or anger, and they may vary in the same patient from a simple weakness of the knees to an overpowering weakness causing them to sink to the floor. The cataplectic attacks or the attacks of sleep may occur without any stimulus, and Wilson remarks that he feels both may be



due to the same common factor. The relation of this syndrome to epilepsy is unknown, but it is to be remarked that their association is infrequent. Possible etiological factors may include:

1. Endocrine factors.
2. Psychopathology.
3. Trauma.
4. Epilepsy.
5. Toxic infective states—encephalitis.
6. Circulatory.
7. Tumors.
8. Idiopathic.

The pathology of this condition has not been worked out, inasmuch as no necropsied cases have been reported. A lesion in the subthalamic region or the floor of the third ventricle has been suggested, possibly on the basis of the fact that tumors in the region of the third ventricle have produced pathological sleep states.

Treatment of this condition is essentially symptomatic. Ephedrine was used heretofore with moderate success. More recently benzedrine has been used and with much more success.

#### CASE REPORT

Mrs. M., age 39, was brought to the office by her husband, who complained, "she sleeps much of the day and she has an enormous appetite, never seems to get enough to eat; she is emotionally unstable and quite irritable. Recently she has become suspicious, and sometimes she seems to hear things when there is nothing there. She is confused by spells and wanders away. A few days ago she disappeared and we found her hours later about 4 miles from home. In the past few months she has had periods of depression and crying spells."

Patient is native born; family and early personal history are not pertinent; no history of any nervous or mental disturbances in family or antecedents. She received an eighth grade education and married at age 25. There are no children. The patient herself gives the history that she was a normal, energetic, outgoing girl up to about 16 years of age, then something seemed to happen causing a change in her personality. Since about age 16 she has been "draggy, no pep, can hardly make myself go." She gives a history of frequent colds and several attacks of influenza throughout her life, but does not recall any definite illness or febrile disturbance about age 16. The episodes of sleepiness and loss of muscular tone were of indefinite onset; she is sure they were present in lesser degree before the age of 20, then gradually increasing in severity to about age 30. There has been little change in the past five years except that she has grown more irritable and tends to be more suspicious of her husband and surroundings.

*Neurological Examination:* Reveals no evidence of organic involvement of the central nervous system other than slightly sluggish pupillary reaction. Laboratory procedures are entirely negative, including blood and spinal fluid serology. There is nothing in the patient's appearance or physical picture suggesting Parkinsonism.

*Psychiatric Examinations* The patient has good insight into her disability. She gives the above his-

tory in an intelligible, straightforward fashion; says she realizes that she is quite irritable and that she makes life miserable for her husband, though she doesn't know why, and she is unable to control her temper outbursts. She tells of irregular menses for the past 6 months and of missing the last period. In recent years she has been able to carry on with her housework under considerable difficulty. Says she doesn't need a maid for her small home, but if she doesn't have a maid about, she finds herself sitting about the house, sleeping for short periods throughout the day. She sleeps normally at night except she feels she needs 10 hours or more. The sleepy spells come on any time of day, most noticeably when there is nobody about or when she has no urgent duties to perform. There is usually no accompanying tonelessness unless there be a definite emotional stimulus. Following such a stimulus, however, the tonelessness and the sleepiness come together. She says the spells of tonelessness are always preceded by some emotional situation and always accompanied by sleepiness or extreme lassitude, but the converse is not true. The attacks of sleep occur frequently throughout every day, but she may do many days without a cataplectic attack. She says she has learned that any emotion is apt to bring on one of her weak spells and she has learned to steel herself against emotional experiences. She can go to an amusing movie, and while those about her laugh, she is able to control her laughter so as to prevent a weak spell. Should she have one of these spells in a movie, her entire body becomes limp, her head falls to one side, and she is unable to raise a hand. She remarks that her appetite is never satisfied; she can eat all day long and most of the night.

#### SUMMARY AND REMARKS

This case represents a rather typical narcolepsy, possibly on the basis of an early encephalitis or a chronic encephalitis process. She was placed on estrogen and small doses of thyroid; also 5 milligrams of benzedrine three times daily. She reported that within 24 hours her attacks of sleepiness were much improved and she had had no cataplectic attack. Benzedrine was increased to 10 milligrams, following which both the attacks of sleepiness and weakness were controlled.

This case is interesting from the standpoint that the patient based the onset from age 16, which would take us back to 1917-1918. It is to be recalled that this was the date of the great epidemic of encephalitis in the United States. It is perhaps significant that benzedrine in narcolepsy as in chronic encephalitis is apt to control a certain portion of the symptomatology while having no effect upon the behavior disturbances. In this case the patient's periods of irritability and temper outbursts continued in spite of the above mentioned improvement.

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## PRACTICE PROTECTION

Recently compiled by the Medical Preparedness Committee was a set of questions and their answers. Here are two pertinent:

*How can the practice of a physician doing military service be protected?* The answer to this problem lies in the humanity and morality of his colleagues. No federal regulation can solve it. In the smaller communities, the doctors who remain at home may agree to care for his patients and turn the fees over to his family, and deliver his patients to him on his return from service. This is being done in many small communities. In larger communities, the problem is more complicated. The five counties comprising Greater New York have set up a fund. When a doctor leaves for service, he notifies his county society that he is going. The other doctors then take care of his patients and turn the fees in to this fund. They are allowed a small percentage of the fee in some instances for their overhead, but it would not exceed 5%. The money accumulated in the fund is paid to the physician or his family, as he may direct. This is a realistic approach to solution of the problem.

*What is the function of the county medical society in medical preparedness?* Every county medical society has been asked to appoint a Committee on Medical Preparedness. This committee could and should survey the medical resources of the county, and make a confidential report to the draft

board as to which physicians cannot be spared from the community without endangering its health. It should also be responsible for protecting the practice of the physician who is called for service. An active committee can do much to safeguard the interests not only of the civilian population but also of the doctor who is called into service, and the defense program as well.

## FOOTBALL INJURIES

Stingent rules of play, improved equipment and rigid systems of physical conditioning serve to safeguard today's football player against injury. These safety measures may be nullified by inadequate medical supervision during play or practice. It takes a strong-willed coach to resist sending in his injured star passer when dear Alma M. is a touchdown behind in the last two minutes, the crowd is yelling, the clock is ticking, and next year's contract depends on winning the close contest. Too often, the boy does go in, to be injured perhaps for life. It should not be left to the coach to say whether this boy plays or not. It is not fair to him or the player. Final authority as to who should or should not play at any given moment should rest with the team physician. Only he can be in position to judge the player's physical condition. Only he has the right to assume final responsibility for the physical welfare of the players.

Most organized games now have a physician in attendance. Rules of the El Paso school system forbid a scheduled game beginning until the team physician is on the field. Yet, what real good is his presence unless he has absolute veto over the desires of the coach to send into the fray players who may be injured? What may appear to be a trivial injury to an anxious, excited coach may well be a matter of serious consequence to the player and his physician. Study of the problem of football injuries has led to conclusions and findings which, applied thoroughly, have greatly lessened all manner of injuries, minor and serious, incurred on the field of practice and play. Today most injuries are known to occur on the nation's sand lots, where training and play are not medically supervised.

Few coaches would be guilty of sending an injured boy in to play. But there are persons who would do just about anything to win a game, and to hell with the consequences. For the sake of the grand old game and the boys who play it, the power of veto over such coaches' desires should rest irrevocably with the team physician.

## WILLIAM H. WOOLSTON, M. D.

At the 26th Annual Session of the Southwestern Medical Association, at Tucson, Arizona, November 21, 1940, Dr. William H. Woolston, of Albuquerque, New Mexico, was elevated to the Presidency. He succeeds Dr. Orville E. Egbert, of El Paso, Texas.

Dr. Woolston was born in Geneva, Illinois, January 18, 1891. He graduated from the Geneva High School and later attended the Cornell University



at Ithaca for one year. He received his A. B. degree from the University of Illinois in 1913 and received his M. D. degree in 1915 from the Northwestern University. Dr. Woolston served his internship from 1915 to 1917 at the Cook County Hospital, Chicago, Illinois. During this time six months special internship on pathology was included.

From 1917 to 1919 Dr. Woolston served with the A. E. F. Base Hospital 36, as a member of the Surgical Team with Evacuation Hospital Number 4.

Dr. Woolston took special training in surgery as assistant to Dr. Allen B. Kanavel, Chicago, from 1919 through 1922. He also studied urology under



Dr. Wm. Senn, of Chicago, during 1920 and 1921. He spent part of 1922 as instructor in surgery at Northwestern University School of Medicine.

Late in 1922 Dr. Woolston moved to Albuquerque, New Mexico, where he has been engaged in the practice of general surgery since 1923.

In February, 1922, Dr. Woolston married Miss Alice M. Gilmore.

Dr. Woolston is a member of the following medical associations:

Alpha Omega Alpha, American Medical Association, New Mexico State Medical Society, Bernalillo County Medical Society, Southwestern Medical Association, American College of Surgeons and the Alpha Kappa Kappa medical fraternity. He belongs to the following non-medical associations: Ballut Abyad Shrine and Phi Delta Theta Fraternity.

## WHY SPECIALTY BOARDS?

For some time there has been developing an undercurrent of sullen, often just criticism of the conduct and standards of certain of the specialty examining boards. In some quarters the opinion is that too much politics enter into selection of successful candidates for the diplomas granted by these boards. It has been said, too, that the founders and early diplomates have, in a few instances, conspired to make it almost impossible for any but a research fellow or a teacher to pass the examinations. It is pointed out that, in the final analysis, the only purpose of these boards is to certify that a candidate is basically qualified to practice on human beings the specialty he professes.

Yet, whether any or all of the cited objections are valid, there does appear to be another side to the picture. It may be illustrated rather vividly by a recent occurrence in one of the "approved" hospitals of this territory. A young physician was called to consult with a practitioner who had not read a book or a medical journal or attended a formal medical meeting since he graduated from a class B school some 20 years ago. The case was an obscure, acute pelvic condition. The young consultant had been in practice but one year, following a general rotating internship of 12 months. In his wisdom he decided to operate for an abdominal pregnancy. He was not qualified, by experience, training or certification, to undertake the care of such a case as cited. The outcome is best left untold.

This may be hanging dirty linen on the lines, and it certainly does not often happen. But the moral is plain—unless medical men regulate themselves even more stringently, boards or no boards, some other agency must!

## WINTER IN THE SOUTHWEST

Now in the North lie banks and ridges of clean, white snow—cold, beautiful in the woods. Out of a leaden sky, the first flake of the new winter danced silently earthward not long ago. Caught by little eddies it flew now here, now there, always downward to its journey's end beside a field stone or the brown stalk of a flower or a milkweed. Soon its fellows trooped quietly in greater and greater numbers out of the gray, smoky clouds blanketing the dull brown earth below. And, in a little time, the low places in the valleys were a magical white. Searching fingers of matted flakes pushed daintily into water's edge of tiny brooks and ponds. Some floated as fairy boats in the quiet water. Birds tucked their heads under wings, sought their shelter in thick evergreen boughs, stopped their noisy calls, only cheeped sleepily as their fellows shifted uneasily in their state of a half-sleep. So has a winter rest come again to forest and field. In city streets there is wetness—cold, half-melted snow mixed with soot and street dirt into a dirty, formless mess. And city dwellers come home in the early dark with wet feet, wet clothing, and shaking chills. Colds come, sinuses are inflamed, pneumonia and diphtheria increase in incidence. Sickness and death are on the march again.

But there is a land where a bright sun lights up the blue mountains, the yellow desert and green watered valleys. It is the Southwest, where snow and slush and wet, cold mud are not known. Dry, warm sunshine calls to earth's peoples and animals to come out and live exultantly under clear skies. Not so many folk are sick in the Southwest winter. In increasing numbers people of the North are migrating to the Southwest for the winter season. Any physician of this land can tell any chamber of commerce plenty of reasons for such migration.

## Special Section

# Arizona State Medical Association

PRESTON T. BROWN, M. D., *Associate Editor*  
403 Professional Bldg., Phoenix, Arizona

### ARIZONA MEDICAL HISTORY

The protracted illness of Dr. Orville H. Brown, the Historian of the Arizona State Medical Association, has led him to turn over to the Association office and the History Committee the large volume of material which he has been laboriously accumulating for the past twenty years. With this material he has made a report given below, without abridgement. This is done for two reasons; in acknowledgement of Dr. Brown's invaluable services in this connection, and because his report makes suggestions which should be carefully read and put into effect in every county society and Medical Auxiliary of the state.—W. W. W.

### HISTORICAL DATA ON ARIZONA PHYSICIANS

ORVILLE HARRY BROWN, M. D.  
*Phoenix, Arizona*

IN the archives of the Arizona State Medical Association there is now data upon most physicians who have ever practiced their profession in the state. Even physicians of the Army, the Indian Service and the Veterans Bureau have been included. These data have been accumulated during the past 15 to 20 years, first in spare time as a self-appointed duty and as a hobby, and in more recent years as historian and chairman of the history Committee of the Association.

It is my belief that physicians generally rate preserved records of their lives. Then, too, may not the knowledge, that such a record is being kept, be stimulating to the worthy accomplishments and deterring to the unworthy ones for the members of our profession? This question is an afterthought and was no part of my original motive. As I said at one time physicians themselves should see to it that their deeds—medical especially—of which they are proud should be filed with the historian; the unsavory events of their lives will reach the columns of newspapers and hence be available to historians. Good deeds are not likely to be heralded so publicly unless, I repeat, physicians themselves do it. Modesty should not prevent one's smothering his regretful record with his prideful one.

The material in the archives fills about seven or eight ordinary typewriter-paper boxes. Each physician who is known to have been in the state at any time to practice medicine is supposed to have one or more sheets of ordinary typewriter paper with facts about him thereupon. My practice has been to send a stenographer to the office of the secretary of the board of medical examiners from time to time to obtain all facts in his files,

regarding physicians who have been licensed by the board to practice medicine in the state. The facts for physicians who have been admitted in the past few years have not yet been obtained. This should be attended to in the near future to bring this part of the work up to date.

Up to the time of the tenure of office of Dr. J. H. Patterson, as Secretary of the Board of Medical Examiners, it was the custom to discard certain of the data, filed with the board at the time a physician applied for license, after it had been kept a reasonable length of time. The present incumbent, I am happy to say, is preserving all material including photographs. It is a shame that the former secretaries did not do the same.

Since the positions on the board of examiners are political and hence shifting from time to time, the policies of the secretary and the board are apt to change. On this account it would seem the part of wisdom to make some arrangement with the board whereby all data not necessary for the board to preserve permanently, would be deposited sooner or later with the office of the Arizona State Medical Association—especially since this organization has permanent headquarters and a secretary for the office. By this arrangement the data could be preserved for all time with little likelihood of destruction and be available for any legitimate purpose.

Another source utilized by me for obtaining facts about our physicians was to ask each to fill out a blank about himself. Some have not done this and should be asked again, as often as necessary, to fill out the blanks. This method is good as far as it goes; the blank obtains sketchy, general information. It partially fails in its purpose mainly because of the innate modesty of physicians who almost invariably give the fewest facts possible about themselves instead of the most. The ideal program would be to have each physician write an autobiography of one to several pages about himself, such, for example, as he would wish to have said of him in his obituary. Writers of obituaries often meet difficulties in finding facts about deceased physicians. Editors generally are painfully aware of this, not because there are not plenty of facts to relate but because those facts have been kept secret.

The various biographical volumes which have been issued from time to time in the state have supplied many facts about a goodly number of physicians. Whenever such a volume is discovered it should be checked to ascertain if the facts about physicians contained in it have been transferred



# President's Page

## LEGISLATIVE ASPECTS

**E**LECTION is now over and the chosen officials will be busy outlining their legislative program for the coming winter. There will doubtless be numerous measures before the legislature relating to health. From pre-election campaign discussions there will undoubtedly be measures introduced relating to silicosis and to public health in its administrative and executive aspects.

The Association Committee on Public Policy and Legislation will be prepared to take part in a constructive manner in such legislative activities as it is pre-supposed that the medical profession, through its organization and committees, will be called on for its opinions in any and all matters relating to health.

In the November issue of our BULLETIN, there was printed in full a copy of a public health law recently enacted in Ohio, with comments from the committee as to the adaptability of this law in Arizona. Copies of this law are being mailed all members of the legislature prior to its session, as well as to other state officials and heads of various civic organizations interested in a sound public health measure for Arizona. The committee is presenting this measure, not as its sole and final opinion on a public health measure for this state, but as a sound basis upon which to draft one. It could, however, be easily amended to fit the code of this state, and be adopted in all its major principles and serve this state well as an administrative measure.

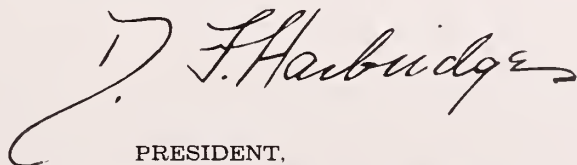
As to silicosis, this is a problem of far-reaching aspects. The Committee on Industrial Health, as well as the Committee on Public Policy and Legislation, will have recommendations to offer for such a measure.

Measures are also anticipated relative to control of venereal disease, especially as relates to pre-marital laws and to the expectant mother.

All of these health measures will have the interest and attention of the Association through its various committees.

The membership is invited and urged to send in any opinions they may have on any of these anticipated health measures, or on others they feel should be introduced and enacted. Again, we urge your opinions and recommendations.

Fraternally yours,



PRESIDENT,  
ARIZONA STATE MEDICAL ASSOCIATION.

to the pages within our files. I think, in the main, these have been exhausted.

Information, about physicians who passed on decades ago, has been difficult to acquire and of course is extremely sketchy. In many cases there is mere mention that a certain physician was at a certain place at a certain time or some such record. These data have been obtained from a variety of sources, such as old newspaper files, historical novels, books of histories, etc. I have read many newspapers and books dealing with early Arizona history and whenever I found the name of a physician I made note of it. For example, in the account of the Oatman family massacre which took place southwest of Phoenix, mention is made of a Dr. LeCount. We do not know whether he lived in the state or was merely passing through. Perhaps some day more light on him will be revealed. There are many similar instances.

Mrs. Alice Hewins, who has done much library work upon early Arizona history, has meticulously kept notes about the physicians she has found mentioned. Her notes are in the files but not always properly "posted". James M. Barney has supplied many facts about physicians from his reading and from his memory. The late Dr. William Vincent Whitmore, of Tucson, did splendid work in gathering biographical data about present and former Pima County physicians. Had we a man in each county with the same devotion to and appreciation of the cause as he had, our files would be replete with valuable material upon a much larger number of physicians than now prevails. Drs. L. A. W. Burtch and James E. Drane have contributed important information.

Current newspapers over the past years have supplied many—literally hundreds—of news items about physicians; many are relatively unimportant as far as can be told at present. Who is to say, however, what item the future historian will say is or is not significant. The unfortunate feature is that my collection of newspaper clippings in the main, concern physicians of Maricopa county. This was because I did not have access to newspapers from other parts of the state and I was not able to interest physicians in other parts of the state in gathering such clippings. I believe that if the matter were properly presented to the Medical Auxiliary its members might be prevailed upon to attend to this. It should be done or at least attempted. The twenty and forty years, or other, period items commonly run in our newspapers should be regularly scanned and items about physicians clipped. It is important that all such clippings be properly dated.

A source of news items, which has not yet been tapped are the files of *Southwestern Medicine*. For years news items have been carried in these columns by the various editors notably by Dr. Warner Watkins and by myself. These items should be methodically searched for and when found recorded in the proper places. Programs

and announcements which I have kept and others in the files of the office of the Arizona State Medical Association should be examined and the information found therein should be "posted" in the proper places.

Among the boxes being placed in the archives are two or three filled with data of all sorts which have not yet been classified and sorted; they should be classified alphabetically and then by names and chronology. These should be "posted" irrespective of their apparent importance. In the files are many photographs of physicians of the state; these should be properly filed. Those physicians who have not supplied photographs of themselves should be pressed to do so—as often as necessary to get results.

I appeal to all physicians to assist in this work. Do not permit modesty to stand in the way.

That my work with this is finished I am not willing to concede; but it is interrupted. May the material be found by me, after a time, in much better order than I have been able to give it.

## THE HOSPITAL LABORATORY

DR. O. O. WILLIAMS

*Pathologist, St. Joseph's Hospital, Phoenix*

In keeping with the type of program previously presented before the Staff, I wish to summarize the work done in the laboratory during the past year beginning with July 1, 1939. During this past year there have been considerable changes made in the hospital laboratory. These changes have been brought about for the purpose of having the equipment and personnel available within the hospital to do all types of diagnostic laboratory work.

It has been stated numerous times that approximately five years is required to develop a laboratory to its fullest functional efficiency consistent with good medical practice. In the absence of endowments an even longer time is required for the institution of a program of research. Fortunately, when the present expansion began in April, 1939, a well organized laboratory in the hospital was already functioning satisfactorily. This was supervised by a capable pathologist and was administered by good technicians. With this organization as a nucleus, the task for adding additional departments was much less difficult. As a result many diagnostic procedures now are undertaken by the hospital laboratory, which if there had been no laboratory present, would have taken a considerably longer period of time to develop.

Within the past year the laboratory has been to a certain extent departmentalized. A department of chemistry has been established and equipped with both capable personnel and sufficient material for the performing of the usual diagnostic chemical procedures and many unusual chemical analyses. These include N. P. N., Urea, Urea Clearance, Glucose, Creatinine, Serum protein, Cholesterol,



rol, Calcium, Chlorides, Gastric analysis, and other blood and urine chemical determinations. It has also been equipped for the determination of the blood and urine concentration of the Sulpha compounds, and blood Vitamin C.

The bacteriology and Serology departments have advanced to a more efficient status. The present bacteriological identification or pathogenic bacteria can be made with certainty in most instances and with reasonable assurance in the more technical and scientific classification. This department is capable of continued advancement with the practical advancement of applied bacteriology. The science of bacteriology is so constantly changing and its practical application extended that it never becomes boresome, and the adept technician never allows it to become routine. Each organism isolated is a special problem. In addition to the usual bacteriological procedures animal inoculations for the identification of bacteria are done. Biological tests, such as the A-Z are also done. In addition we have a Basal Metabolic Apparatus and have recently obtained an electrocardiograph.

A few educational functions have been established by the laboratory. Weekly Clinical Pathological Conferences are given to which all physicians are invited to take an active part in the discussion of cases. In addition the laboratory has established a training school for technicians, which has met the approval of the committee set up by the American Society of Clinical Pathologists. The physicians of the County Medical Association are invited to use the pathological material we have in the preparation of scientific papers, study, or in the preparation for taking the examinations of the different specialties boards. As the latter requires considerable knowledge of pathology, the material might be of use to those contemplating these examinations.

The most important function of the laboratory is its service to the patient and to the physician. We hope to develop this service to such an extent

that it will aid materially in the diagnosis and the treatment of the sick and if possible to contribute to medical knowledge. New procedures of proven value will be added from time to time and suggestions from the staff will be greatly appreciated.

I have prepared a few slides which have to some extent summarized the work done during the year. Slide No. 1 shows a total of 51,453 laboratory tests, 32,925 of which are considered routine. This routine consists of a blood count, urinalysis, and Kahn. It can be readily seen from the slide that there is a gradual increase in the Winter months with a decrease beginning about the first of April. This is in keeping with the fact that the hospital load increases during the Winter months. The routines, however, do not increase within the same proportion, indicating that during the active season there is an increase in variety of laboratory work. A large proportion of this increase is the result of pneumococcus typing and transfusions. However, there has been a steady increase in the number of chemistries and special laboratory work. The number of bacteriological work has also increased steadily during the past year. In surgical pathology there has been a very definite increase in the number of sections run. We have instituted parafin sections in all tissue studies. Slide No. 2 and No. 3 show neoplasms occurring during the year. While the classification that is given here does not indicate the general trend of malignancy in the community, it does summarize the particular cases that were studied in this hospital. There was total of sixty-eight malignant tumors during the year. The greatest number of malignancies in the hospital are those of the breast and the female organs of reproduction. This is the case in most statistics. In the study of the breast tumor approximately 46% have been malignant or a ratio of 1.8 to 1 being benign. Practically all the tumors of the large intestines were malignant.

We have had during the year an autopsy percentage of 39.1%. Slide No. 4 shows the major systems involved in the cause of death. There have been two cases of Myasthenia Gravis which is unusual for a hospital of this size, and thirty cases of one type or another of central nervous system involvement which was the major disease found at autopsy. This might indicate a more intense interest by the physicians of the hospital in diseases involving the central nervous system. Slide No. 5 shows a classification of diseases of the cardiovascular system and the lungs. There were six cases of hypertensive heart disease, two of which were considered as essential hypertension, while the remaining four were the result of chronic glomerular nephritis. There were two cases of coronary sclerosis, and three of syphilitic aortitis. Two of the latter had aneurysms. One of these aneurysms was found as an incidental finding at autopsy. The pulmonary disease, bronchial pneumonia which was a primary factor in the cause of death was found in ten cases. There were nine cases of tuberculosis, six of which were complicated by a tu-

#### POST GRADUATE COURSES IN OBSTETRICS

The University of Chicago and the Chicago Lying-In Hospital through the cooperation of the Illinois State Department of Public Health and the Children's Bureau, U. S. Department of Labor is offering postgraduate courses in obstetrics. During this last summer and fall these courses have varied from 5 to 6 weeks in length. Between January 1 and July 1, 1941 all of these courses will be limited to 4 weeks. The lectures will be arranged so that essentially all of the material given before will be condensed into the shorter period. Practically the only change will be in the length of time for observation in the clinics.

Communications and applications should be sent to Postgraduate Course, Department of Obstetrics and Gynecology, 5848 Drexel Avenue, Chicago, Illinois.

berculous meningitis, and two being associated with a Diabetes Myelitis.\*

One case of pulmonary fibrosis with bronchiectasis and pulmonary abscesses resulted from the inhalation of Sulfur Dioxide. Slide No. 6 shows the variety of diseases of the central nervous system causing death. Six of these cases had brain tumors. These brain tumors fell into four separate types. There was one case of Cystercercus Cyst. The remaining consisted in both purulent and tuberculous meningitis, encephalitis, of which there were three cases, and one case of Poliomyelitis. We had one case which apparently died of a cerebral death, but at autopsy we were unable to find any marked pathological changes. Because of a history of a bite on the arm three days previous, which cleared up before death, we considered this possibly a black widow spider bite. There was one death resulting from a scorpion bite. Two accidents resulting in fracture of the skull and cerebral hemorrhage occurred. Spontaneous cerebral hemorrhages were encountered on three cases.

## COMMUNICATIONS

Sir:

The National Institute of Health is beginning the development and organization of a research unit to be concerned entirely with the problems of aging. The importance and future significance of this field of research are obvious when one considers the rapid shift in the average age of the population of the country. The problems concerned with the aging process have ceased to be of mere academic interest and have become urgently imperative.

Prior to the actual inauguration of a clinical and research program, we are attempting to survey what work in being done along these lines by American scientists. Personal letters of inquiry are going out to as many of these investigators as we have reason to believe have a special interest in this field, but we are anxious to reach everyone even potentially interested. Because publication in scientific journals may reach many who would otherwise be omitted, I am herewith submitting the enclosed informational resume in the hope that that you may give the matter brief editorial notice or incorporate the statement in the section devoted to news and comment in *SOUTHWESTERN MEDICINE*.

Your cooperation in facilitating the search for information will be greatly appreciated. For your personal information may I say that thus far the replies received from many scattered investigators have indicated an extraordinary interest, enthusiasm, and wholehearted desire to cooperate.

Sincerely yours,

EDWARD J. STIEGLITZ, M.D.,

In Charge Investigations in Gerontology,  
U. S. Public Health Service.

## NEWS

### General

The Civil Service Commission announces that enough applications have been received to meet the prospective need for temporary and part-time civilian medical officers in connection with the army expansion. Receipt of applications closed Monday, October 14.

The commission calls attention to the fact, however, that there is an urgent need for medical officers and senior and associate medical officers to fill permanent positions in other agencies. Applications will be received until further notice. The positions pay from \$3,200 to \$4,600 a year. Fourteen specialized branches of medicine are included.

There is also an urgent need to fill junior medical officer positions at \$2,000 a year at St. Elizabeths Hospital, Washington, D. C.

Full information and application forms for these examinations may be obtained at the office of the secretary, Board of U. S. Civil Service Examiners at any first- or second-class post office, or from the U. S. Civil Service Commission, Washington, D. C., or from any of the commission's district offices.

### El Paso

Governor O'Daniel has appointed the following men from the El Paso County Medical Society to serve on the medical and appeals board in connection with the Draft Act: Drs. T. J. McCamant, Orville Egbert, H. H. Varner, S. D. Armistead, W. W. Britton, E. J. Cummins, Paul Gallagher, T. C. Liddell, J. E. Morrison and S. H. Newman.

The following members of the El Paso County Medical Society have been called to active duty with the armed services:

#### ARMY

Capt. Bloyce Britton, assigned to Wm. Beaumont General Hospital, El Paso, Texas.

First Lieut. John Peticolas, assigned to duty at Santa Fe, New Mexico.

#### NAVY

Lieut. Com. Ralph Homan, assigned to Naval Hospital, Parris Island, S. Car.

Lieut. Charles E. Webb, assigned to Naval Hospital, Parris Island, S. Car.

Lieut. (j.g.) Vincent Ravel, assigned to recruiting duty, Dallas, Texas.

Dr. Robert H. Geer, El Paso physician for 24 years, died in his home October 10, 1940, following an illness of 6 months.

Dr. Geer was born in Sparta Tenn., and came to Texas as a child. He later returned to Tennessee and graduated from Pleasant Hill Academy. He attended school at Polytechnic Institute in Fort Worth. He graduated from the University of Texas



School of Medicine at Galveston in 1913. He first practiced medicine, after leaving school, in Dallas. Dr. Geer was a member of the El Paso County Medical Society, and Fraternity Lodge No. 1111, A. F. & A. M. He was a past-president of the El Paso Archery Club. He was also a past-president of the Farm Bureau at White Spur in the Upper Valley.

Survivors are the widow, Mrs. Minnie L. Geer; two stepsons, Newell and Keslie Hays; two daughters, Mrs. Dean Earp of El Paso and Mrs. Jim Derrick of Carlsbad, New Mexico; a sister, Mrs. Fred L. Fox; and six grandchildren.

Funeral services were held October 12. Dr. Geer was buried in Restlawn Memorial Park.

A regular meeting of the El Paso County Medical Society was held October 14, 1940, at 8 p. m. in the tea room of the Hotel Cortez. The program was as follows: "Regional Ileitis," Dr. J. L. Green; "Prenatal Care," Dr. C. D. Hunter.

A regular meeting of the City-County Hospital Staff was held Wednesday, October 16, 1940, at 6:30 p. m. at City-County Hospital. The program was as follows: "Unusual Case of Typhoid Fever," Dr. Screen; discussion by Dr. Newman. "Tumor of Testicle," Dr. Parker; discussion by Dr. Robert Thompson.

El Paso's general hospitals have again been approved by the American College of Surgeons. A survey of their facilities was completed October 1, 1940. El Paso hospitals approved: City-County, Masonic, Hotel Dieu, Providence, Southwestern General and William Beaumont (U. S. Army).

The El Paso County Medical Society Tumor Clinic also was approved as one of the 345 cancer clinics so recognized by the college.

## MISCELLANY

### PROBLEMS OF AGING

The National Institute of Health of the United States Public Health Service is organizing a new unit for research into some of the many problems of aging. With the conspicuous shift to greater age in the population, senescent individuals are becoming increasingly significant in the national economy and defense. Preventive medicine must attack the practical problems of the rising proportion of deaths attributable to diseases of middle and later life and energetically attempt to augment the health and vigor of those past the meridian. Aging is a continuous biologic phenomenon which starts upon creation of a new individual and continues at variable rates until death. The problems of aging (gerontology) are not limited to the diseases of the aged (geriatrics), for the latter are the consequences of senescence. In man probably the most significant period of life for

gerontologic study is late maturity, approximately the two decades between 40 and 60.

The problems of aging are logically divisible into three major fields of investigation: (1) the biology of senescence as a process, (2) the human clinical problems of aging and of diseases characteristically associated with advancing years which include the mental changes of senescence and senectitude as well as the physical changes, and (3) the socio-economic problems of a shifting age distribution in the population. The National Institute of Health is concerned with the first two of these divisions of the science.

In order to advise this new unit, there has been formed a National Advisory Committee on Gerontology, representative of the scientific thought of the nation. The membership of this advisory committee includes:

- Dr. L. R. Thompson, Director, National Institute of Health, U. S. Public Health Service.
- Dr. Anton J. Carlson, Physiologist, University of Chicago, National Research Council.
- Dr. Charles L. Christiennin, Association of Life Insurance Medical Directors of America; Medical Director, Metropolitan Life Insurance Co.
- Dr. Robert A. Coker, Zoologist, University of North Carolina.
- Dr. William Crocker, Botanist, Boyce Thompson Institute of Plant Research.
- Lawrence K. Frank, Sociologist, Josiah Macy, Jr. Foundation.
- Dr. A. Baird Hastings, Biochemist, Harvard University.
- Dr. Ludvig Hektoen, Pathologist; Consultant, National Cancer Institute, U. S. Public Health Service.
- Dr. Winfred Overholser, Psychiatrist; Superintendent, St. Elizabeth's Hospital.
- Dr. Clarence Selby, Industrial Physician, General Motors Corp.
- Dr. William P. Stroud, Clinician, Philadelphia, Pa.

The first service to scientific research which the unit on gerontology is undertaking is to conduct a survey of the present trends of active and contemplated investigations into the problems of aging in American scientific institutions. This survey is intended to ascertain just what problems are being studied and what methods of approach are being applied. There is no desire to learn, in advance of publication, the data being developed in these specific undertakings.

In addition to these studies, many investigations which do not pertain directly to aging should yield data useful to workers in gerontology. The unit on gerontology is especially interested in knowing of these indirectly related studies, the full implications of which are far too often obscured in their published titles.

Inquiries about studies related to aging are being sent to scientists in the basic biologic sciences as well as to clinical investigators, for much fundamental work upon the processes, mechanisms and consequences of senescence is probably going on in the sciences of botany, zoology, physiology, pharmacology, psychology, etc. From the clinical viewpoint, our greatest concern is with those studies dealing with health evaluation, mensuration of functional capacity (including criteria of "physiologic age") and with those diseases whose incidence increases sharply in later life (the so-called "degenerative disorders").

Critical analysis of the information elicited by such a survey may be expected to serve several valuable purposes. It should assist in bringing to-

gether in closer cooperation investigators interested in related problems, especially when widely divergent methods of approach are being utilized. The survey will likewise emphasize the urgent need for greatly augmented support for significant studies of these vitally important problems of senescence.

The broad and general pattern of the problems being investigated will undoubtedly reveal a number of neglected "blank spots" which may justify special emphasis in the future. Analysis of the data of the survey will also be an invaluable aid in formulating future research programs, both at the National Institute of Health and elsewhere.

Information concerning subjects under investigation and the methods of approach is earnestly solicited. Letters should be addressed to:

DR. EDWARD J. STIEGLITZ,  
In Charge Investigations in Gerontology  
National Institute of Health, U. S. Public  
Service, Bethesda, Md.

### ALLERGIC RHINITIS

All cases of allergic rhinitis should have the following studies made whenever possible before commencing treatment:

1. A careful history in an attempt to discover the possible cause.
2. A careful blood study including the calcium content.
3. The presence or absence of eosinophiles in the nasal secretion should be determined. Their absence does not disprove allergy.
4. An endocrinological survey of the case, especially the thyroid gland function.
5. Careful examination of the patient's diet and questioning as to the onset of symptoms in reference to each and every food used by the particular individual.
6. Careful examination in reference to all contacts, living and non-living.
7. Careful examination of the intranasal structure, the presence or absence of polypi, a careful study of the nasal septum, presence of secretion, whether mucoid, mucopurulent or pus.
8. Careful study of the appearance of the nasal mucosa, its color and consistency. The deeply congested mucosa seems to point to a complicating sinus infection while the paler mucosa points to an allergic state.
9. Skin sensitization tests.—*Med. Record.*

### GROUP MEDICINE

"Should all medicine eventually be distributed on the group principle?" is a question asked by one of its ardent supporters.

In answering this query I want to propound a few conundrums myself.

Just how are towns, villages, hamlets and scattered homes in rural districts to be served with group doctoring? Is the mountain coming to Mahomet?

Just where, outside the bigger cities, are the specialists going to be dug up to form the necessary groups to attend these remote sections? Must their

inhabitants depend on flying squadrons, who, after city office hours, dash into the country for a hurried tour?

Is every bronchial cold, coryza, quinsy, cinder in the neck, every pimple on a fair maiden's cheek, every boil on an old maid's gluteus maximus be "Mayoed" or "Johns Hopkinsed"?

Must every baby shake hands with an oculist, dermatologist, neurologist, orthopedist, and all the other high and mighties as soon as it arrives in the world before it gets its eyes open? If a person wants to get vaccinated, have a blood count, or take a laxative, must he push-button a clinic and be interviewed and pawed over by a mob of experts?

If 3,500 families are supplied by a retinue of 15 or 20 medical men trained in various specialties, what are such families going to do for prompt service if an epidemic like the influenza of 1918 suddenly invades their midst and half their number and half the docs are stricken? Will they have to depend on chiropractors and osteopaths?

Will the whole tribe of experts duly assemble for a gala occasion when the garrulous wench loaded to the gills with all the symptoms in the book—and a few she has invented on the side—comes to a clinic for a copious mental catharsis about her pet neurosis? Will the entire gang turn out at night to examine a surgical abdomen and remain patiently a couple of hours trying to convince a reluctant victim he must be hospitalized without delay and have an ugly gash cut in his belly?

*N. Y. State Jour. of Med.*

### CLASSIFICATION OF HEADACHE

The attempts at classification of headaches have in general been unsatisfactory. The following scheme, modified from the plan of Auerbach, has seemed useful inasmuch as it is rather complete and directs attention to the basic condition of which the headache is a symptom.

- A. Independent forms:
  1. Migraine.
  2. Nervous and mental states; nervous exhaustion, psychogenic, etc.
  3. Posterior neck conditions; myalgic, nodular (induration), hypertonic neck muscles, fibrositis, arthritis of the cervical spine, etc.
  4. "Erythromelalgia of the head."
- B. Headaches associated with diseases of individual organs:
  1. Brain disease: tumor, abscess, meningitis, encephalitis, hydrocephalus, pachymeningitis interna, cerebral and cerebrospinal syphilis, cerebral arteriosclerosis, epilepsy, trauma, etc.
  2. Eyes: refractive errors, muscle imbalance, pathological tension, inflammations.
  3. Nasal space: contact or congestive headache, empyema, Vidian or Sphenopalatine neuralgia,



4. Teeth.
  5. Digestive tract, kidneys, pelvic disorders.
- C. Headache in general disease:
1. Infectious diseases; fevers.
  2. Acute and chronic intoxications; alcohol, tobacco, lead poisoning, etc.
  3. Constitutional disorders; endocrines, anemias, etc.—*Journal—Lancet*.

#### PHYSICIANS FOR THE NAVY

Physicians are needed in the regular navy, and in the navy reserve.

For the navy reserve male citizens under 50 years of age, graduates of class "A" medical schools, who meet physical and professional requirements, are eligible. Members obligate themselves to serve in the navy in time of war, or during the existence of a national emergency declared by the president. In time of peace they may be ordered to active or training duty only with their own consent.

There are four classes of reserves, and appointments to them are made without professional examination on presentation of satisfactory credentials.

*Organized Reserve:* Appointments are made only from members of the volunteer, general service class in the grade of assistant surgeon with the rank of lieutenant (junior grade). Officers are required, and paid, to perform one period of drill a week, and 14 days of active training duty annually. Their purpose is to be ready for immediate mobilization in the United States fleet.

*Volunteer, General Service Class:* Appointments are made only as assistant surgeon with the rank of lieutenant (junior grade) the same as first lieutenant in the army, between the ages of 27 and 35. Members are not required to perform drills or training duty, but may request such duty, with or without pay, depending on the availability of funds. In a limited number of cases this may include aviation training. Mobilization may be either with the fleet, or within the continental limits of the United States or in the United States' possessions.

*Volunteer, Special Service Class:* Appointments are made in this class with the ranks of lieutenant (junior grade), lieutenant and lieutenant commander according to the candidate's age, professional standing and academic seniority. Members are not required to perform drills or training duty but may request such duty with or without pay depending on the availability of funds. This class is composed of men who have had special professional training or have qualified as specialists. Ordinarily their mobilization is with the continental limits of the United States or its possessions.

*Merchant Marine Reserve:* Appointments in this class are made from medical officers of the merchant marine.

Members of all these classes are needed for active duty at the present time, and they are invited to request such duty for the period of emergency. Many are already on duty.

The regular navy needs young doctors between

21 and 32, graduates of class "A" medical colleges, and with at least one year's internship. There is also an opportunity for fourth-year medical students to take an examination for entrance as acting assistant surgeons. If successful, they are given their internships in the navy after graduation.

Further information about the regular service may be obtained by writing to the Surgeon General, U. S. Navy, Washington, D. C.

For information about the naval reserve it is preferable to write to the commandant of the naval district in which the applicant resides.

#### PATHOGENESIS OF EDEMA

(After Landis)

1. Increased capillary blood pressure.
  - (a) Congestive heart failure.
  - (b) Thrombophlebitis.
  - (c) External pressure on veins.
  - (d) Heat.
  - (e) Dependency.
  - (f) Vasodilatation (hemiplegia, trophedema).
2. Decreased plasma colloid osmotic pressure.
  - (a) Loss of albumin.
    - (1) Urine.
    - (2) Ascites.
  - (b) Inadequate protein intake.
    - (1) Dietary restriction.
    - (2) Impaired absorption (vomiting, diarrhea, mucosal edema, etc.).
  - (c) Impaired synthesis of plasma protein.
    - (1) Infection.
    - (2) Anemia.
    - (3) Cachexia.
    - (4) Hepatic malfunction.
    - (5) Nephritis.
    - (6) Pregnancy.
  - (d) Sudden plasma dilution.
    - (1) Following sudden recovery from dehydration (diabetic coma, diarrhea in children, etc.).
    - (2) Following acute massive hemorrhage.
3. Increased capillary permeability (allowing passage of protein and diminishing effective colloid osmotic pressure).
  - (a) Inflammation (infection, burns, etc.).
  - (b) Acute glomerulonephritis.
  - (c) Anemia (anoxemia).
  - (d) Congestive heart failure (anoxemia).
4. Decreased lymphatic drainage.
  - (a) Lymphedema.
  - (b) Increased venous blood pressure (congestive heart failure).

—*Fla. Med. Jour.*

#### OCULAR DISEASES OF DENTAL ORIGIN

In the presence of focal infection, the dental conditions listed below should be considered as having a possible etiologic relationship in the following order.

(1) Devitalized teeth. The most dangerous are those that show on an x-ray a non-granulomatous rarefying osteitis, that is, a periapical diffuse dark

area without definite limitations, which indicates that the infection is not well walled off. Those with "good" root fillings are most likely to show such areas. Thickening of the periodontal membrane is another significant sign.

(2) Stumps, just below the mucous membrane. These should always be removed regardless of x-ray findings, as they are always badly infected.

(3) Devitalized teeth with granulomata. The granuloma is a defensive mechanism which occurs mostly with those teeth that either have no root fillings or only partially filled root canals. It may or may not show on the x-ray film.

(4) Devitalized, x-ray negative teeth. Such teeth may be even more dangerous than x-ray positive teeth, as the lack of x-ray findings indicates less resistance to infection.

(5) Tooth remnants surrounded by alveolar bone. Edentulous mouths should be x-rayed as otherwise these root remnants would be overlooked.

(6) Residual infection in alveolar bone.

(7) Pyorrhea alveolaris.

(8) Acute apical abscess (acute suppurative periodontitis).

(9) Impacted unerupted teeth. The tubular nature of dentine presents favorable conditions for pulp infection which may occur even without pulp exposure.

(10) Degenerating vital pulps. Hidden caries should be sought and all fillings scrutinized.

—*Ill Med. Jo.*

## BOOK NOTES

**CLINICAL DIABETES MELLITUS and HYPERINSULINISM:** By Russell M. Wilder, M. D., Ph. D., F. A. C. P., Professor and Chief of the Department of Medicine, The Mayo Foundation for Medical Education and Research, University of Minnesota; Head of the Section on Metabolism Therapy, Division of Medicine, The Mayo Clinic, Rochester, Minnesota. 459 pages with 19 illustrations. Philadelphia and London: W. B. Saunders Company, 1940. Cloth, \$6.00.

So much has been added to our knowledge of diabetes in the past few years that one wonders just how soon this book, or portions of it, will become obsolete in its turn. However, for the time being, the work represents about all that is known about diabetes. The treatment of diabetes is approached from the viewpoint of substitution therapy, diet therapy and exercise. Various chapters are devoted to complicating diseases or disorders of the systems of the body. While these chapters are not detailed, the reader, in a minimum of time, can inform himself to an astonishing degree about various ramifications of diabetes and its complications. This book is a distinct contribution to present day literature on this disease.

**DIABETES. PRACTICAL SUGGESTIONS FOR DOCTOR AND PATIENT,** by Edward L. Bort, A. B., M. D., F. A. C. P., Associate Professor of Medicine, Graduate School of Medicine, University of Pennsylvania; Chief of Medical Service B, The Lankenau Hospital, Philadelphia; Assistant Editor, The Encyclopedia of Medicine. Foreword by George M. Piersol, B. S., M. D., F. A. C. P., Professor of Medicine, Graduate School of Medicine, University of Pennsylvania; Editor in Chief The

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- ★ Vaginal Moniliasis
- ★ Bartholinitis and Skeneitis  
(due to *Trichomonas Vaginalis*)

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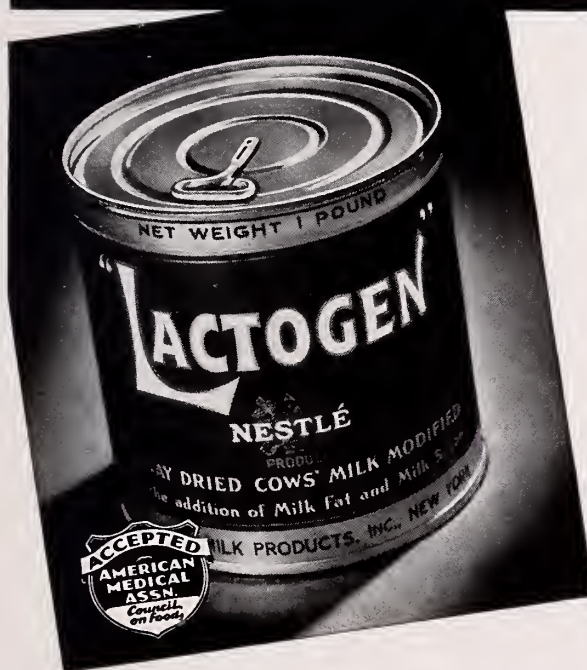
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Cyclopedia of Medicine. Pp. 296 with index. Illustrated. Fabrikoid. \$2.50. Second Edition. Philadelphia. F. A. Davis Co. 1940.

There are today several books available for the diabetic patient that are written by physicians specializing in the treatment of this disease. The book by Bortz is one of the best available. At the end of each chapter there are several questions, which if answered fully by the reader will insure his understanding of what he has just read. A number of illustrations, some of them colored, lend heightened interest to the book. There is a good chapter on diabetic recipes, which contains some very intelligent directions on the preparation and cooking of food for the diabetic. The patient who reads this book can not fail to be in a better position to cooperate with his doctor in the treatment of his affliction. It would be a smart idea if every diabetic patient could be furnished a copy of this book when he first comes for treatment.

**OFFICE UROLOGY:** By P. S. Pelouze, M.D. Assistant Professor of Urology, University of Pennsylvania; Consulting Urologist, Delaware County Hospital; Special Consultant to United States Public Health Service; Member of Board of Directors, American Social Hygiene Association and American Neisserian Medical Society. 766 pages with 443 illustrations. 19 in color. Philadelphia and London: W. B. Saunders Company, 1940. Cloth, \$10.00.

No general practitioner or urologist can afford to be without this book. True enough, it is not a detailed study of just one aspect of urology, such as the specialist might delight in. It is, on the

other hand, a rather complete exposition of office methods of diagnosis and treatment of diseases of the genito-urinary system. A particularly valuable chapter is entitled "The Sexual Problem." Where else in the world can people with sexual problems turn for guidance excepting to their physicians? Despite the levity with which this fundamental concern of human beings is sometimes treated in various places, the physician, armed with knowledge, must remain a haven of confidence in this respect to his patients. On the whole, this is an exceedingly worth-while addition to the literature of urology.

**COMPENDIUM OF REGIONAL DIAGNOSIS IN LESIONS OF THE BRAIN AND SPINAL CORD:** Robert Bing, Professor of Neurology, University of Basel, Switzerland. Translated and edited by Webb Haymaker, M.D. Assistant Clinical Professor of Neurology and Lecturer in Neuro-Anatomy, University of California. Pp. 292 including index. 125 illustrations, 27 in color and 7 plates. Cloth. 65.00. Eleventh Edition. St. Louis: The C. V. Mosby Co., 1940.

To the physician concerned with the nervous system this book represents an absolute necessity. Through 11 editions has this work considered in astonishing detail various disturbances of the body caused by lesions in the brain and spinal cord. As knowledge of the nervous system has increased it has been necessary to enlarge the book, so that now this compendium considers nearly all the possible disturbances of the nervous system and instructs in how their diagnosis is accomplished. When any medical textbook lives for over 30 years

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**PHYSICAL DIAGNOSIS:** By Ralph H. Major, M.D., Professor of Medicine in the University of Kansas. Second Edition, revised. 464 pages with 437 illustrations. Philadelphia and London: W. B. Saunders Company, 1940. Cloth, \$5.00.

This is a clearly written, extremely well illustrated textbook which deals with that most important art of the physician—physical diagnosis. The work is primarily written for the undergraduate medical student. It represents the accumulated experience of many years teaching in the University of Kansas School of Medicine. Explanations are detailed and exceptionally clear. The drawings and photographs are intelligently placed in the text.

**APPLIED PHARMACOLOGY:** Hugh Alister McGuigan, Ph.D., M.D., F.A.C.P., Professor of Pharmacology and Therapeutics, University of Illinois, College of Medicine. Pp. 914, including index. Illustrated. Cloth \$9.00. St. Louis: The C. V. Mosby Co., 1940

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**SYNOPSIS OF MATERIA MEDICA, TOXICOLOGY, AND PHARMACOLOGY:** By Forrest Ramon Davison, B.A., M.Sc., Ph.D., M.B.; Assistant Professor of Pharmacology in the School of Medicine, University of Arkansas, Little Rock. Pp. 633, with index. 45 illustrations with 4 in color. Fabrikoid. \$5.00. St. Louis: The C. V. Mosby Co., 1940.

For quick desk reference we prefer a book of this type. A busy practitioner hardly has time to wade through pages of experimental data when he wants to find a simple statement regarding the action of some particular drug. Few would have the hardihood to study this book in detail, although the Lord knows most of us would benefit greatly thereby, so to the majority the volume must remain an exceptionally useful reference work only.

**A TEXTBOOK OF MEDICINE (By AMERICAN AUTHORS):** Edited by Russell L. Cecil, A.B., M.D., Sc.D. Professor of Clinical Medicine, Cornell University Medical College; Associate Attending Physician, New York and Bellevue Hospitals, New York City. Associate Editor for Diseases of the Nervous System: Foster Kennedy, M.D., F.R.S.E. Professor of Clinical Neurology, Cornell University Medical College; Attending Physician, New York Hospital; Visiting Physician in Charge, Neurological Institute. Fifth Edition, revised and entirely reset. 1744 pages with 173 illustrations. Philadelphia and London: W. B. Saunders Company, 1940. Cloth, \$9.50.

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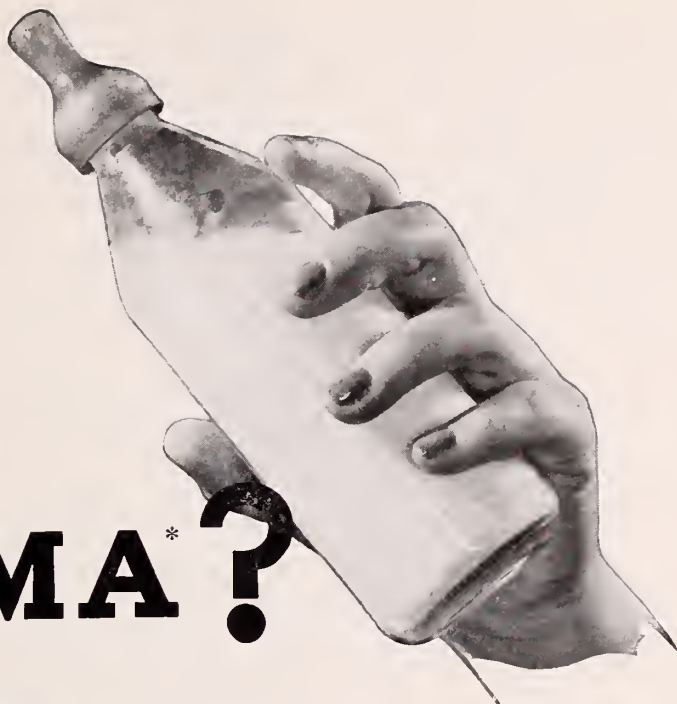
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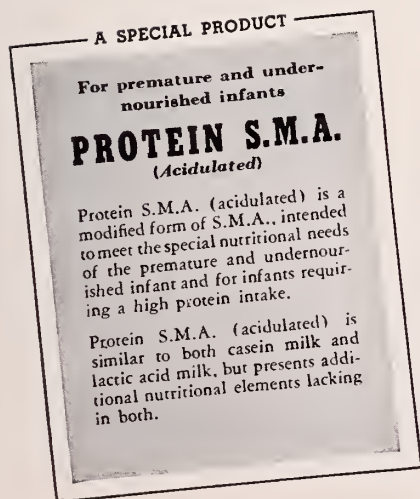
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EL PASO, TEXAS, DECEMBER, 1940

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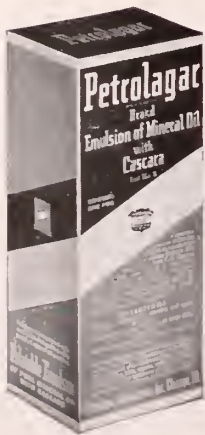
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# STUDIES IN THE AVITAMINOSES



This page is the final of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A full color, two-page insert on the same subject appears in the December 7 issue of The Journal of the American Medical Association.

## The Exacerbation of LATENT PELLAGRA by Acute Infections

Vitamin requirements are increased by many factors, especially by acute infectious disease. Field, commenting on this phenomenon, states that the onset of pellagra may coincide with pregnancy, organic gastrointestinal disease, severe and prolonged illnesses, and dietary restriction for therapeutic purposes. The patient whose tongue is shown developed this manifestation of pellagra during the course of lobar pneumonia. After nicotinic acid therapy was started she coughed up a cast of the esophagus which consisted of a grey membrane similar to that covering the tongue. The pellagrous symptoms responded promptly to treatment.



Illustration courtesy of Virgil P. W. Sydenstricker, M.D., University of Georgia Medical School, Augusta, Ga.



Illustration courtesy of Virgil P. W. Sydenstricker, M.D., University of Georgia Medical School, Augusta, Ga.

## The Coexistence of Vitamin Deficiency States

Many authors have recently presented evidence that vitamin deficiency states often are multiple. Strauss has called attention to the fact that deficiency disease in man, unlike that experimentally produced in animals, is rarely limited to a single factor. The patient whose hands are shown had partaken of a markedly deficient diet for several months. As a result, scurvy and pellagra developed concurrently. The ecchymoses of the former and the dermatitis of the latter are clearly visible. Specific therapy together with dietary adjustment led to prompt remission of these signs.





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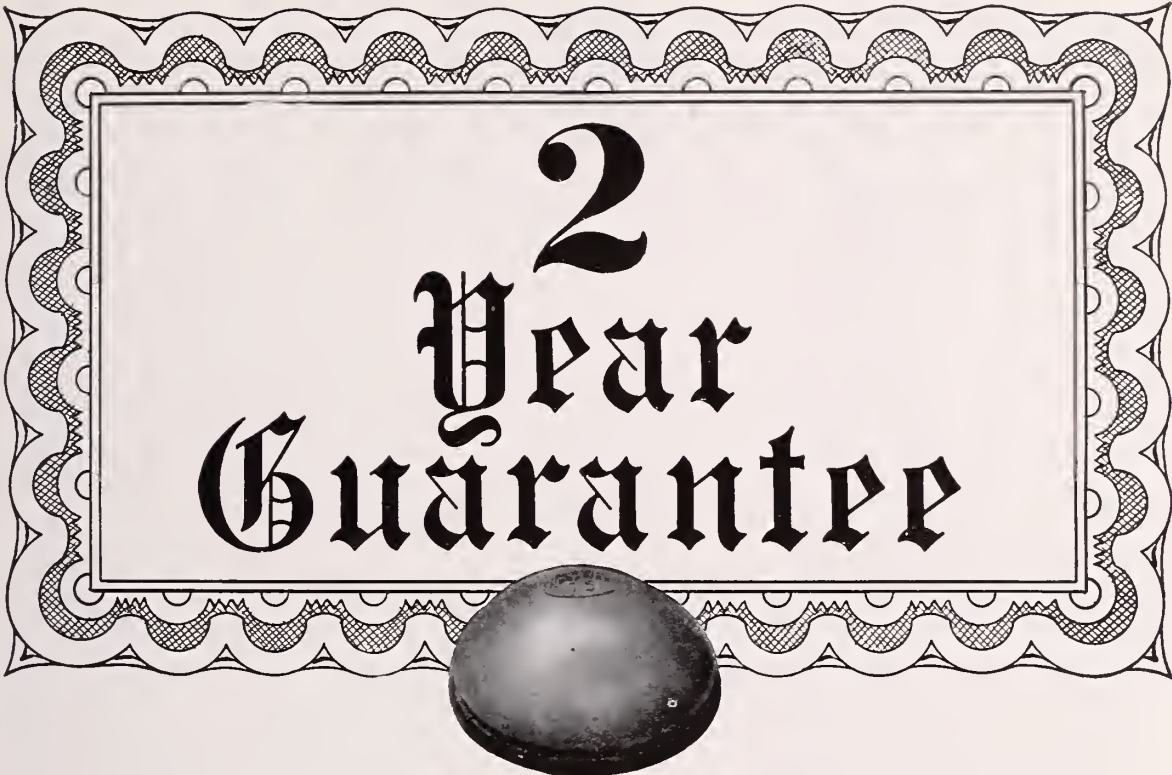
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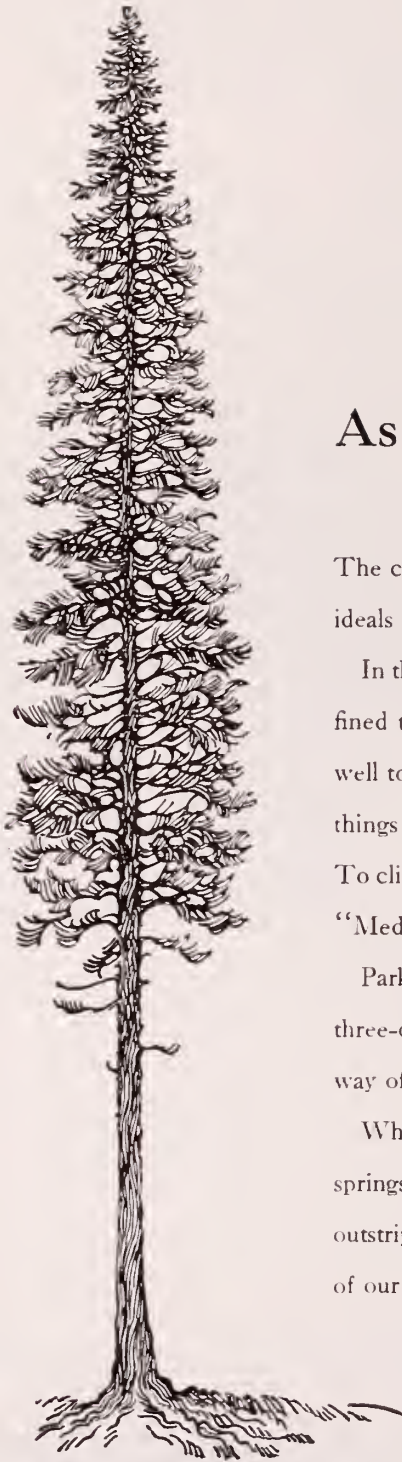
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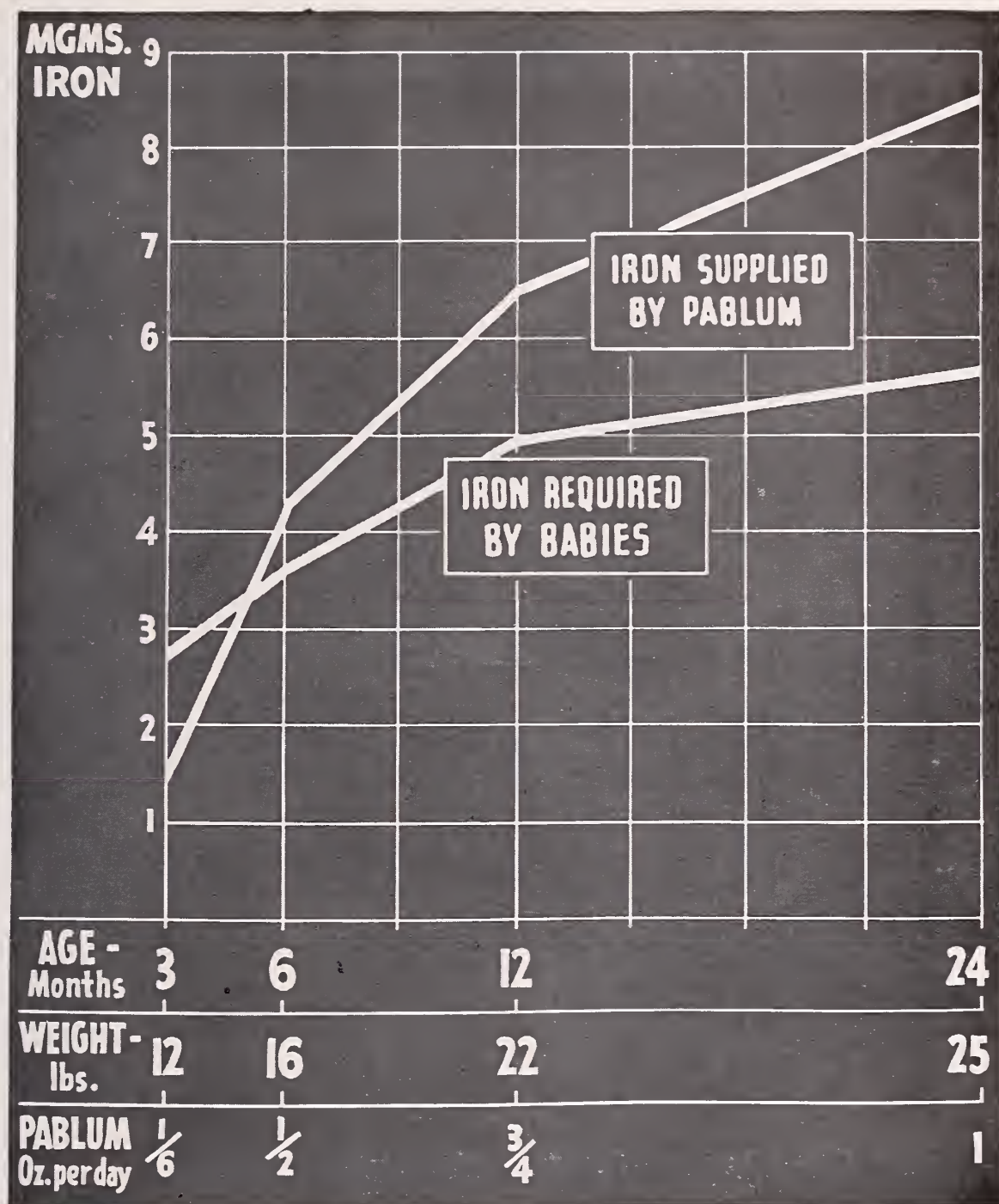
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No. 12

## Post-Graduate Medical Education

ORVILLE EGBERT, M.D.

*El Paso, Texas*

RECENT years have brought from the field of medical research an enormous amount of priceless information. Because of the great medical foundations and the research departments of our great universities have been organized and operative for a generation, we may anticipate a consistent and ever increasing flow of this information into the science of medicine.

Those of us in the clinical field, the bedside physicians, must ever keep before us the distinction between the science of medicine and the practice of medicine. We in the practice must be constant students of the science in order that the new that is practical may become a part of our clinical armamentarium. It is seldom that one feels secure in launching into a new procedure of treatment when knowledge has been gained from the literature alone.

Seldom can we set the new sulfanilamide upon the apothecary shelf to be pulled down and dispensed for a condition where it is indicated, then returned to the shelf. The conversion of a scientific medical discovery to an instrument of practice is more complicated than that. Typed pneumococcic serum, and the sulfanilamide preparations came into universal use almost simultaneously in the treatment of lobar pneumonia. Sulfapyridine seems to give a bacteriostatic effect in clinical application that it does not in the test tube. And yet the pneumonia is not cured by it. The specific sera seems to precipitate the crises more readily and with fewer complications. Best results are obtained from a combination of the sulfapyridine and the pneumococcic sera.

This conclusion is far reaching and complex. We find that bactericidal and bacteriostatic drugs do not cure disease. The pathology is not resolved until immunity has been aroused. Every man treating pneumonia should be fully informed in chemo-therapy and immunization therapy, and then will he have at his command one of the greatest medical advances of all time.

I use the above example to illustrate the need of careful and detailed post-graduate study that practitioners may be able to take advantage of

the contributions of medical science to medical practice.

Necessarily there must be some lag between the development of principles and techniques and their actual application in average practice. The application should first be made in our large teaching hospitals where sufficient clinical material is available and where observations are scientifically detailed and accurate.

Between the time when our teaching institutions have available practical clinical data, and the actual application of them by the physician in the field, there should be a minimum amount of lag. That there may be minimum of lag we have built up, in this country, a system of post graduate training unique in the scope it covers.

Post graduate medical education is a broad term. Formerly it was the designation of training in a specialty. I shall not attempt to discuss specialty training, formal courses, and short courses at medical centers. I shall only mention the circuit courses and refresher courses, such as has been adopted by State Medical Associations in Tennessee, Texas, Idaho and others. A post graduate medical assembly such as that of the Southwestern Medical Association provides intensive lectures and seminars that serve the purpose of bringing to the membership detailed discussions of the new methods that have been worked out in medical centers and universities. The teacher brings a series of subjects, with some regard for curricular arrangement and preparation. He presents the individual subject with the informality of the class room. The student has the opportunity to ask questions that bring out explanations and elaborations from the experiences of the teacher. In this way the man in the field gets pertinent ground work in the new instruments of diagnosis and therapy that gives him a sense of security as he adds them to his clinical storehouse, catalogued for immediate use.

The informality of the round table luncheon discussions makes possible the bringing out of detail and offers the opportunity to the teacher to informally discuss many observations that have not yet become sufficiently classical to be placed in text books where certain degrees of finality

must have been attained before the author is justified in offering them.

The business of this association is conducted as a non-profit organization with a minimum amount of dues and fees devoted to the operation of the association. All funds collected are used to secure better and larger programs. We follow the same type of presentation as the International Post Graduate assembly, the Dallas Southern Clinical Society, the Post Graduate Assembly of South Texas and others. We have had on our programs men who have been on several or all of the Assembly programs and many that have been on our programs have later been used by the other assemblies. Our programs are in every way the equal of these other assemblies, the only difference being in the number in attendance.

Presentations to a relatively small membership may amount to an infringement upon the time of our speakers; selfishly, it is a great advantage to those of us in attendance. It has been a source of great satisfaction to those responsible for past programs to have teachers say that lively interest and appreciation from our members compensated for our small numbers.

I would call to the attention of our guest speakers that though we are small in number we come from a vast area. Our association takes in New Mexico, Arizona, West Texas and Northern Mexico. The distance from Alpine, Texas to the western border of Arizona is the equal of the distance

from New York to Chicago. The distance from the City of Chihuahua to the northern boundary of New Mexico is the equal of the distance from Atlanta, Georgia to the Canadian border. The long travel of men and women to attend this conference bespeaks their appreciation.

Speaking for the officers of this association, we are deeply grateful to Dr. C. A. Thomas and his committees for their months of labor to bring about the entertainment of this association in Tucson. We are indebted to them for one of the finest programs and one of the finest faculties of distinguished professors that this or any other post graduate medical assembly has had.

To our members and guests: We trust that you will find much to stimulate your interest and to improve your individual methods. We hope that your contact with various minds and with newer knowledge may bring into sharp relief the rapidity and breadth of medical advances. We hope that you find answers to questions that have puzzled you. And if you do find increased knowledge of newer methods you will return to give better care to your patients and thus, without going beyond your proper fields, enlarge the scope of your practice through enriched diagnostic and therapeutic methods.

So will you justify the efforts of the Southwestern Medical Association to bring post-graduate medical education to the Southwest

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## Partial Gastrectomy in Certain Cases of Duodenal Ulcer

VERNE C. HUNT, M. D.

*Los Angeles, California*

EXPERIENCE that one gains over a period of years in the surgical treatment of a certain type of lesion affords the opportunity not only of employing the various surgical procedures which have been in vogue, but also of analyzing the immediate and ultimate results of those procedures. Thereby the relative merits of the various operations as they are performed under the variable circumstances become most impressive insofar as the individual surgeon is concerned. This is particularly true of duodenal ulcer. There is as yet incomplete accord among surgeons as to just what type of operation shall be employed in cases of duodenal ulcer in which the indications for surgical treatment are entirely clear, but crystallization with a convergence of ideas is occurring. That difference of opinion does exist among surgeons as to the applicability of the different types of operation that may be employed in the surgical treatment of duodenal ulcer emphasizes the often stated fact that no one operation may be successfully used routinely in all cases. Instead, that surgical procedure should be selected which

most nearly fulfills the purpose of surgical intervention and which after a thorough survey of the situation upon opening the abdomen may be carried out with the maximum degree of safety. Individualization in the selection of the operation is necessary not only in terms of the purpose of operation in the particular instance, but also as pertains to the general condition of the patient by virtue of associated disease and as the general condition of the patient has been adversely effected by the complication of the ulcer for which surgical intervention is instituted. Alternative methods must always be available, for while one procedure might be preferable and seem to most nearly fulfill the purposes of surgical intervention, extensive disease, previous operations, anatomical anomalies and other factors may mitigate against its judicious employment. In other words, the surgeon not infrequently in the surgical treatment of duodenal ulcer is confronted with the problem of choosing between an operation of choice and one of expediency. It is highly essential in the final selection of an alternative procedure over the one of choice that in so doing the primary purpose of the operation is

Presented at the fifty-eighth annual meeting of the New Mexico Medical Society, at Albuquerque, New Mexico, May 27-29, 1940.



still adequately served and that there is minimum compromise in the control of known factors predisposing to reactivation of the ulcer or to new ulcer formation. Performing a posterior gastroenterostomy and failing to excise the bleeding lesion when the primary purpose of operation is the control of bleeding illustrates the point.

The surgeon must necessarily have definite and clear ideas regarding the indications for surgical intervention in cases of duodenal ulcer and should have clear ideas regarding the relative merit of operations in effecting cure of the disease with minimum incidence of postoperative recurrence or reactivation. It is acknowledged by the surgeon and the internist alike that gastric acidity and gastric secretion have much to do with recurrence of ulcer following medical or surgical methods of treatment. In fact, most all methods of medical management which have been employed and all surgical procedures which have been designed for the treatment of duodenal ulcer have been predicated on the control of gastric acidity and gastric secretion through either dilution, neutralization or quantitative reduction. It is well known that the results of treatment for duodenal ulcer, whether that treatment is medical or surgical, depend upon adequate control of gastric acidity and gastric secretion.

#### OBJECTIVES OF OPERATION

By this time the surgeon experienced in the performance of operations for gastroduodenal lesions has become as thoroughly convinced as the internist that the uncomplicated ulcer is seldom if ever a surgical disease. In the complicated duodenal ulcer the purpose of operation is clearly defined. Three complications are generally recognized as distinct indications for surgical treatment, and not necessarily in order of their frequency or gravity, they are perforation, hemorrhage and cicatricial pyloric stenosis with gastric retention. A fourth complication of rather infrequent occurrence, but now generally recognized as a distinct indication for surgical intervention is proved or established intractability to or impracticability of medical management as exhibited by repeated recurrence. Perforation of a duodenal ulcer is of two types: the acute free perforation and the protective perforation, the latter often resulting in penetration of nearby structures, most frequently the pancreas. In the acute free perforation of a duodenal ulcer the surgeon's responsibility is solely that of saving life through hasty closure of the perforation. That recurrence of symptoms frequently follows recovery from an acute perforation and its closure, and that a subsequent operation curative in purpose is necessary in many instances, are entirely beside the point. The purpose of operation in the hemorrhagic or bleeding ulcer is the control of past, present or future bleeding. In the ulcer which has progressed to cicatricial pyloric stenosis with resultant gastric retention, drainage of the stom-

ach comprises the chief objective of operation. The ulcer which recurs after simple closure of an acute perforation, the penetrating duodenal ulcer and those duodenal ulcers in which neither acute perforation, bleeding nor cicatricial pyloric stenosis has occurred, but which have proved resistant to medical management, comprise a group of cases in which cure of the disease is the primary and all-important purpose of surgical intervention. No single operation serves the purpose of operation under all of these varying circumstances with maximum assurance of good results.

#### SURGICAL PROCEDURES

In discussing the surgical treatment of duodenal ulcer at this time it is necessary to bear in mind that it is only the ulcer in which one or another complication has occurred that is now quite unanimously accepted as a surgical disease, whereas heretofore and for a good many years uncomplicated ulcer has in the experience of many comprised a respectable percentage of cases in which various operations were performed. It has been the uncomplicated ulcer in which many of the conservative operations have been performed and in which the field of applicability of gastroenterostomy and the various types of pyloroplasty operations with or without excision of the ulcer has been wide. Experience through the years has proved that usually the uncomplicated duodenal ulcer responds so well to painstaking medical treatment that surgical intervention is rarely necessary or justified. Experience has likewise proved that the results following the relatively conservative operations in uncomplicated ulcer are not good, and that the seriousness of the disease in uncomplicated duodenal ulcer is not sufficiently great to justify either the magnitude or risk of a partial gastrectomy. In other words, the disease must be serious and complicated in order that the results of surgical treatment may be good.

An insidious change has occurred during recent years in the employment of certain surgical procedures in duodenal ulcer — not an arbitrary change — but an entirely natural and justifiable change entirely in keeping with the increasing magnitude of the problems of duodenal ulcer which are largely those of the complications. The surgical duodenal ulcer is no longer the benign lesion amenable to relatively benign and conservative surgical procedures that it formerly was. By this it is not to be inferred that the original disease differs materially from that of the past, but rather that relatively benign duodenal ulcer is no longer regarded as a surgical ulcer. Inasmuch as practically all surgical duodenal ulcers today are complicated in one way or another, major problems are encountered whereby the purposes of the surgical procedures are usually not adequately served by the relatively benign, conservative operations, which through necessity and not from choice have been relegated to an inferior

status, and have been superseded in many instances by partial gastrectomy. From this statement of mine do not infer that many of the conservative operations which have been used in the past have become obsolete and no longer possess merit. There still remains a distinct place at least for posterior gastro-enterostomy and lateral gastroduodenostomy. For the purpose of providing adequate drainage of the stomach in those cases of cicatricial pyloric stenosis of chronic duodenal ulcer, properly executed posterior gastro-enterostomy remains a procedure with results unsurpassed by any other type of operation. The operation of lateral gastroduodenostomy of Jaboulay as modified by others likewise retains a position of usefulness in certain carefully selected cases of duodenal ulcer. The various types of operations which may be grouped together and designated as pyloroplasty, with or without excision of the ulcer, have surrendered their relatively high status of former years through their own inapplicability to the surgical duodenal ulcer and its complications of today.

The operation of posterior gastro-enterostomy has lost prestige—and unjustly in my opinion—largely on the grounds of variably reported incidence of new ulcer at or about the stoma. That such a new ulcer at or about the stoma does occur may not be successfully denied, but that gastrojejunal and jejunal ulcers occur frequently following a properly executed gastro-enterostomy in cases where the indications for that operation have been rigidly adhered to, is a statement which is immediately subject to vigorous challenge. The high incidence of gastrojejunal and jejunal ulcer has occurred through the injudicious employment of gastro-enterostomy in the uncomplicated duodenal ulcer. Faulty execution of the gastrojejunal anastomosis not only as concerns the position of the stoma in the stomach and in the jejunum, but also as concerns the mechanics of the gastro-intestinal union, has served to defeat the purpose of surgical intervention, namely, drainage of the stomach and reduction of gastric acidity through dilution and neutralization by duodenal and jejunal content. The former wide field of usefulness of the operation of gastro-enterostomy has narrowed considerably during recent years, but this does not reflect upon the merits of the operation as it is employed in the condition for which it was originally devised, namely, that of organic pyloric obstruction. Experience has proved that through the employment of gastro-enterostomy the purposes of surgical intervention are usually inadequately served in the complicated, surgical duodenal ulcer of today except when that complication is cicatricial pyloric stenosis secondary to a chronic duodenal ulcer or due to cicatrization subsequent to simple closure of an acute perforation.

#### PARTIAL GASTRECTOMY

Even though the conservative operations as they

have been employed in the past in the hemorrhagic or recurrently bleeding ulcer have been successful in a certain number and percentage of cases, the assurance against future bleeding has not been great. Experience by this time substantiates the idea that past, present and future hemorrhage from a duodenal ulcer may be permanently controlled only through excision of the ulcer, and usually this is most advantageously accomplished by performing a partial gastrectomy. Many bleeding duodenal ulcers are situated on the posterior wall of the duodenum and adequate access to this area to facilitate excision of the ulcer-bearing portion of the duodenum is often gained only after transecting the stomach at some level proximal to the pylorus.

The penetrating ulcer of the duodenum, particularly the ulcer of the posterior wall, in which protective perforation has occurred with subsequent penetration of the pancreas, presents technical problems, the satisfactory solution of which in many instances is found only through transection of the stomach with removal of the distal portion thereof and the first part of the duodenum to a level just below the ulcer. Similar problems are not infrequently encountered when recurrence of an ulcer following simple closure of an acute perforation requires subsequent surgical consideration, and the solution to these is likewise at times to be found only through removal of a part of the stomach. It is not my desire to leave the impression that when a partial gastrectomy is performed for duodenal ulcer the ulcer-bearing area of the duodenum should always be included in the resection. It may be stated, however, that failure to include the bleeding ulcer within the scope of the resection constitutes a serious compromise of the primary purpose of an operation for this particular complication.

If there is agreement with me in the statements which have been made regarding the necessity for excision of certain duodenal ulcers and the exclusion from the gastroduodenal tract of such others as the posterior penetrating ulcer, the statement is in order that frequently this can all be accomplished by conservative transduodenal methods or by pylorotomy, with little sacrifice of the stomach itself, thus facilitating restoration of gastroduodenal continuity. To this statement I wholeheartedly subscribe. Even though excision of a duodenal ulcer on the posterior wall of the duodenum may be accomplished by one or the other of these relatively conservative operations, the incidence of recurrent ulcer is sufficiently great to leave me, at least, with a total lack of ability to select the cases in which such conservative operations might afford the maximum assurance against a recurrence of the ulcer. Again, it is not my desire to leave the impression that a field of usefulness for these conservative operations does not exist. There are instances in which for one reason or another the magnitude of a partial gastrectomy and its attendant risk



are such that they outweigh the probability of recurrent ulcer following one of the conservative operations referred to previously, and wherein one may find the applicability of one of them to be preferable.

When one is in quest of the surgical procedure which will provide the greatest assurance against recurrence of ulcer, certain physiologic processes must receive due consideration. All surgical procedures for duodenal ulcer provide in theory at least and in fact in some, for the control of gastric acidity and gastric secretion, through either dilution, neutralization or quantitative reduction. In the conservative operations dilution and neutralization must be relied upon for the control of gastric acidity. Without bringing together the data at this time, it may be said that there is considerable evidence at hand to support the idea that dilution and neutralization of the acid in the gastric secretion is greatly enhanced if the duodenal content is made available to the gastric content at or immediately below the level of its highest alkalinity, namely, the second and third portions of the duodenum, and also if the duodenal content is made available to the gastric content for admixture through a downstream by-pass instead of through upstream regurgitation. Experience tends to support strongly the idea that if one wishes to employ a conservative operation whereby the duodenal ulcer may be excised and the gastric acidity controlled through dilution and neutralization, prepyloric transection of the stomach with pylorotomy and resection of the ulcer-bearing portion of the duodenum, followed by low end-to-side gastroduodenostomy of Haberer affords maximum assurance against recurrent ulcer insofar as conservative operations are concerned. The applicability of this operation is not universal.

Many factors have contributed to the necessity or advisability of utilizing partial gastrectomy in the treatment of the surgical duodenal ulcer. In performing partial gastrectomy many duodenal ulcers can be excised and the control of gastric acidity is materially enhanced not only through quantitative reduction of gastric secretion, but also through neutralization and dilution of gastric acidity by the alkaline jejunal content. In the quantitative reduction of gastric secretion by gastric resection two vital questions arise: (1) How much shall the gastric secretion and gastric acidity be quantitatively reduced? (2) How much of the stomach shall be removed to provide the desired reduction? To my knowledge no one has as yet provided an acceptable and satisfactory answer to either of these questions. These questions, of course, have to do with the problem of recurrent ulcer following gastrectomy. It should be stated that an anastomotic or jejunal ulcer does develop in a small percentage of cases following partial gastrectomy for duodenal ulcer. Heuer's collective review of a large series of cases

disclosed that an anastomotic or jejunal ulcer followed partial gastrectomy in 0.6 to 6 per cent of the cases with an average incidence of 1.9 per cent. All manner of resections and the various methods of restoring gastro-intestinal continuity were included in this review. No analysis of the amount of stomach which was removed in relation to the incidence of recurrent ulcer was possible.

The terms partial gastrectomy, subtotal gastrectomy, and gastric resection imply removal of a circumferential portion of the stomach without indication or designation of the amount of stomach that is removed. Not until qualifying terms are universally adopted to designate the amount of stomach which is removed in the operation of partial gastrectomy can a common ground be established upon which one may engage in analytical processes. I should suggest that removal of the pyloric half of the stomach be designated as hemigastrectomy and that the various other magnitudes of gastric resection be designated in terms of thirds, fourths, fifths, et cetera.

Conflicting experimental work has brought much confusion, but out of it all certain fundamentals have become firmly established. Since Heindenhein's and Langley's discoveries of the secretory nature of the gastric cells, the secretory mechanism of the gastric mucosa has been subjected to intensive investigation. While by this time the individual contribution to gastric secretion of each of the several types of cells comprising the gastric glands is pretty well understood, the mechanism by which the secretions are produced remains mysterious. Bensley has recently stated, in substance, that next to nothing is known about the chemical processes which are incident to secretory activity, but enough is known to justify the presumption that a series of converging chemical processes are concerned in the preparation of the specific antecedent secretory materials contained within the cells of the gastric glands.

Three types of glands are present in the stomach of man, and while they are spoken of as fundic, pyloric, and cardiac, each group is characterized by certain predominating cellular content and secretory product. Bensley recognized only two types of gastric glands; (1) the gastric glands proper which occupy the proximal two-thirds of the stomach and whose function in general is to produce the active elements of gastric secretion, and (2) the pyloric glands which occupy the distal third of the stomach, and whose function is mainly the production of mucous. While in the main five different cells constitute the gastric glands, certain ones are predominant in each of the three divisions of the stomach. Whatever the mechanism may be by which hydrochloric acid is formed it is agreed that the parietal cells are largely concerned and that the degree of gastric acidity is dependent upon them. They are present

in all of the gastric glands, but are most numerous in the glands of the body and fundus of the stomach. Berger, in 1933, showed that in the normal stomach the parietal cells were most numerous, with quite consistent uniformity throughout the entire body of the stomach, and that the parietal cells were approximately 75 per cent, 50 per cent, and 1 per cent as numerous in the glands at the lesser curvature angle, at the cardia, and at the pyloric antrum respectively as in the glands of the body of the stomach.

If one might presume that the preoperative degree of acidity could be reduced proportionately to the amount of parietal cell content of the stomach that is removed by resection it remains to determine what degree of postoperative acidity is commensurate with satisfactory gastric function and minimum chance of an anastomotic or jejunal ulcer. This is only part of the problem. There are those who in their enthusiastic acclaim of partial gastrectomy have desired and attempted to produce anacidity through removal of three-fourths or four-fifths of the stomach. There is little to substantiate the idea that only through the production of anacidity may assurance be provided against recurrent ulcer. Furthermore, it is apparent that those who endorse high, extensive resection of the stomach for the relief of duodenal ulcer have lost sight of the diluent and neutralizing effect of the jejunal content upon persisting gastric acidity afforded through gastrojejunal anastomosis.

It is my opinion that postoperative anacidity not only is not necessary to afford the maximum assurance against recurrent ulcer, but that it is highly undesirable. There is good reason to believe that postoperative reduction to approximately one-half of the preoperative degree of acidity provides a reasonable degree of assurance that an anastomotic or jejunal ulcer is a remote possibility. In performing a partial gastrectomy one should remain mindful of the fact that dilution and neutralization through gastrojejunal anastomosis operate in conjunction with quantitative reduction in the control of gastric acidity and gastric secretion. In accordance with this line of reasoning it has been our policy for the most part to confine the magnitude of partial gastrectomy for duodenal ulcer to resection of the pyloric third of the stomach including the lesser curvature angle and the ulcer-bearing portion of the duodenum, resorting to hemigastrectomy only in those cases in which the total preoperative acidity approximates or exceeds 100.

Through a judicious selection of the cases of duodenal ulcer in which it has seemed that by removing a part of the stomach the purposes of operation were best served, we have succeeded in reducing our own mortality rate of gastric resection during the past year to well within 5 per cent. Many factors contribute to the relative safety

with which gastric resection may be performed. The procedure from a technical standpoint may be one relatively easy of execution, when the operation is a primary one where all structures are free, or it may be exceedingly difficult when dealing with recurrent duodenal ulcer following a previous closure of an acute perforation or subsequent to any one of the various pyloroplasty operations. A number of details in the postoperative management have contributed much to the reduction of the mortality rate. The immediate postoperative institution of light suction drainage of the stomach and maintained for a minimum period of forty-eight hours, preferably seventy-two hours, has proved of utmost value, and has decreased to a minimum the incidence of postoperative gastrojejunal dysfunction.

In performing partial gastrectomy no single one of the alternative procedures for establishing gastro-intestinal continuity is applicable in all cases. Experience has proved that only rarely may one avail himself of a gastroduodenal anastomosis. The Billroth II method of gastrojejunal anastomosis and its various modifications has much to commend it. However, usually the posterior end-to-side restoration of gastro-intestinal continuity after the method of Polya is the one of choice.

At the 1939 Congress of the American College of Surgeons in discussing the current methods in the management of peptic ulcer I said, "it has been during the last few years only that I have subscribed to the idea of partial gastrectomy in duodenal ulcer and have employed the operation with increasing frequency, approximately 30 per cent of the cases, particularly in the hemorrhagic and penetrating ulcers." Since that time we have performed partial gastrectomy in nearly one-half of the duodenal ulcers which we have operated upon. It seems to me that the rationale of partial gastrectomy is entirely sound in certain cases of duodenal ulcer and its complications, and that its employment in those cases in which excision of the ulcer is desirable will provide results not attainable by any other procedure.

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... In the last quarter of the nineteenth century medical men in Philadelphia were probably more active than any other group in the country. This was due in part to the existence in the city of several flourishing medical schools, in part to the unique position occupied by the medical publishers of the city. That general pre-eminence does not exist any longer, due, I trust, to the fact that other cities have crept up on Philadelphia in activity and reputation and not to any slipping back of the city.



## Spinal Cord Tumors

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**T**HIS discussion is entirely a clinical resume and no attempt at pathologic classification will be attempted. It will be limited to neoplasms arising within the spinal cord, intramedullary tumors and those arising from structures immediately surrounding the cord, extramedullary lesions. We shall also briefly discuss some of the diagnostic problems associated with extruded intervertebral disks with pressure on the cord or nerve roots that make up the cauda equina. The above lesions are thought to be rare only by those who have not been trained to search for them. Within the past ten years we have seen 78 cases at the Scott & White Clinic where the neurologic service has been comparatively a small one. If we compare this number with those seen a decade prior, we realize that all seen were not recognized. A suspicion must precede a definite diagnosis and this suspicion must be aroused by a carefully elicited history. The fact that in our small series there were only seven intramedullary neoplasms and that all others offer such excellent surgical results if diagnosed early that to overlook one is medical treason. There were twenty-one extruded disks in this group.

### SYMPTOMS

The symptoms of spinal cord tumors may be divided into two groups, namely, sensory and motor. The sensory symptoms may be further considered as due to irritation of one or more nerve roots or due to cord pressure affecting the pathways distal to the lesion. In well over eighty per cent of most large series of cases the first symptom is pain. In most of the extramedullary tumors root pain precedes all other symptoms. This symptom is of extreme diagnostic and localizing value when present and is often definitely characteristic. It is usually described as a severe, lancinating, neuralgic pain aggravated by coughing, sneezing, laughing, and one that usually awakes the patient after four to six hours sleep and is often alleviated by change of position. Frequently these patients learn to sit up rather than to lie down at night and often assume bizarre positions during rest which they have found by experience lessens the discomfort. Any patient with a history of pain of this character deserves a very careful neurologic study.

The second most common symptom is paresthesia. This symptom is due to disturbances of the conducting pathways distal to the lesion and is usually described as numbness, tingling, formication, the sensation of heat or cold, and in fact each patient has his own individual descriptive terms for this particular type of discomfort. The

paresthesias are seldom of localizing value. This symptom is often the first one in intramedullary lesions and gradually progresses to the level of the lesion. This is the reason why the sensory level is seldom abrupt in intramedullary lesions, as is usually the case with the extramedullary ones.

The third most common symptom is usually motor weakness. Motor disturbances occurred as the first symptom is only 8 per cent of the series of cases as reported by Bailey and Bucy. The motor and sensory disturbances very seldom parallel each other and, as stated above, the sensory disturbances precede the motor in the vast majority of the cases.

### DIAGNOSIS

After a carefully taken history we must proceed with a painstaking neurologic examination. In tumors that arise from the cord proximal to the conus, the deep reflexes below the site of the lesion are usually exaggerated, the superficial reflexes diminished or absent, and pathologic reflexes such as Babinski, Gordon, Oppenheim, and Chaddock are often present and, if so, give undoubted proof of a disturbance of the pyramidal cells or tracts.

The sensory examination is of most importance, especially from the standpoint of localization. First, if root pain is present, the exact segment involved should be carefully elicited. "Girdle pains" may afford an exact location, and inquiry should also be made in regard to them. Then all forms of sensation should be carefully tested since the position of the tumor may cause a definite disassociation of sensation. These tests consist of carefully examining patient for pain, heat and cold, touch, vibratory sense, sense of position of the extremities, and two point discrimination. The necessity for testing for all types of sensation arises from the fact that if the tumor is situated on the posterior aspect affecting the columns of Goll and Burdock vibratory sense and sense of position would be affected sooner than other types of sensations. If in the posterolateral portion of the cord, pain, heat, and cold abnormalities and pyramidal tract signs would appear sooner. By way of emphasis, let us again say that the most important localizing finding is a sensory level. This level may be either subjective or objective; that is, the patient may simply experience a diminution of sensation at a certain level rather than its absence and if this is constant and the patient is cooperative and intelligent the subjective level is of just as much importance as an objective one.

The examination must be completed by testing the muscle strength, speed, gait and posture of the individual. A routine procedure in suspected

cases should be percussion of the spinous processes as undue local tenderness may afford a lot of information.

Sphincter loss in spinal cord tumors is usually a rather late symptom and only occurred in one-third of a group of cases reported by Adson of the Mayo Clinic. Here again minor subjective differences in the control of the vesicle or anal sphincters may be of definite significance.

Lesions which arise from the conus of the spinal cord or affect the nerve roots distal to the cord, give rise to another group of symptoms and findings. The same type of tumors may arise at this level as affect the spinal cord proper, but the majority of lesions at this level are probably traumatic and caused by extrusion of the cartilage with secondary pressure on the nerve roots. Of course extruded disks are by no means limited to this area. The symptoms are usually those of so-called sciatic pain and it is to differentiate them from sciatic neuralgia that is often quite confusing. Some of the important symptoms in the differential diagnosis is the fact that pains due to pressure on the nerve roots are usually aggravated by coughing and sneezing more than those of a sciatic neuralgia. Sciatic pains are practically never bilateral and a diagnosis of bilateral sciatic neuralgia is seldom, if ever, a justifiable one. An examination of patients with pains in this area usually affords definite evidence for the differential diagnosis. The tests that we have found of considerable importance in giving us a clue is by bending the head forward or by jugular pressure, such as is made when testing for spinal block, increases the pain when due to pressure on the nerve roots much more than in the simple sciatic type of pain. These patients should be carefully tested for peri-anal or saddle-shaped anesthesia and when an area of anesthesia is found in the peri-anal region, we can eliminate sciatic neuralgia as its cause. The reflexes should be carefully checked and an absence of the hamstring or Achilles on one side is marked evidence in favor of pressure on the nerve roots. Lesions such as those described above will be found in the exact proportion that they are looked for.

#### DIAGNOSTIC AIDS

The history and neurological tests in spinal lesions are still often not conclusive and further examinations must be carried on in the form of special tests; these tests consisting of careful x-ray examinations of the spine, spinal punctures, and the use of radiopaque oils such as lipiodol. The x-ray examination is of extreme value in ruling out metastatic lesions, marked arthritis, and in a considerable number of cases can demonstrate the exact location of the lesion. This examination, to be of value, must be expertly interpreted. Erosion of the pedicle, lamina and spinous processes are thought to be of more value than erosion of the bodies of the vertebrae and this fact seems to be conclusively demonstrated by Camp and his co-workers of the Mayo Clinic.

Pedicle and spinous process changes have proved of little value in our group although they have been carefully sought. The x-ray should consist of antero-posterior view, a lateral view and careful stereoscopic views of the exact portion of the spinal column where the lesion is suspected.

Probably the second most valuable procedure is that of spinal punctures. The spinal puncture needle should be introduced below the suspected site of the lesion and the pressure tested by a water monometer. After initial readings have been made, pressure over the jugular veins should be made and response to jugular pressure carefully noted. This test is known as the Queckenstedt. The laboratory study of this fluid should consist of the estimation of total protein as well as a careful cell count and serologic study if indicated. A total protein of forty mgms. per cent or more is certainly indicative of a block in the absence of evidence of an inflammatory reaction. Only three cases of our group showed the xanthochromic fluid described by Froin. Spinal puncture may often afford an exact location, especially in lesions affecting the cauda equina as by going in between the fifth lumbar and the sacrum, we can often demonstrate a block; and by repeating the puncture one interspace higher we can often get above the block affording us an exact localizing sign. Not infrequently in lesions in this area the spinal puncture needle is introduced directly into the tumor and an exact reproduction of the patient's pain without obtaining fluid often localizes the lesion for us immediately.

The third procedure is that of the use of radiopaque oils. We are of the opinion that this test should be one of corroboration and localization and only in rare instances should be a diagnostic procedure. In other words, after the diagnosis has been made this test may be of value to corroborate the diagnosis and to afford exact evidence of the location of the lesion. It is of most value in lesions affecting the distal portion of the spinal cord and the cauda equina. Since the spinal cord ends at the upper portion of the first lumbar vertebrae, lesions affecting the nerve root distal to this location often afford no localizing clue. We inject from 3 to 5 cc. of lipiodol and this is carefully observed on the tilting table by fluoroscope. The patient should be examined while lying on his abdomen, turned to his back and also in the oblique positions. Corroborative films should also be made.

Lipiodol often affords us a definite clue as to the type of lesion with which we are dealing, that is as to whether it is an intramedullary or an extramedullary lesion. It is also of value as to whether it is an intramedullary or an extramedullary lesion. It is also of value as to whether the tumor is intra or extradural.

We prefer not to use lipiodol except in anticipated surgery as we often get a mild meningeal irritation from it and areas of localized encysted lesions have been reported although we have not



observed this in our experience and have been using it since 1927.

Scott and White Clinic.

Discussion: Dr. D. F. Monaco, Gallup.

Dr. Bassel is to be congratulated for his excellent presentation of such a difficult subject in the short time allotted him.

There is no doubt that many cases of spinal tumors are not recognized early enough and these cases are probably first seen by the general practitioner. As the doctor has ably put it, a carefully elicited history arouses a suspicion and the suspicion precedes a definite diagnosis; but to say that overlooking an early case is medical treason is putting it rather strong.

I would like to modify that statement a little. I often wonder if the specialist ever stops to realize how much is expected of the average practitioner—who is supposed to early diagnose every thing under the sun. I believe that the medical treason should apply to the well experienced who muffs the early case. On the other hand the practitioner should be encouraged to summon adequate consultation. I believe that at every opportunity the physician should be reminded about careful history taking and more attention paid to teaching him the correct method of history taking.

All tumors of the spinal cord or membranes that compress the cord fall in a single clinical group which can be differentiated only after a complete study. They include gummas, tubercles, parasitic cysts and neoplasms.

The spinal tumors are chiefly sarcomas, of which a considerable proportion are extradural.

Severe trauma has appeared to be a direct exciting cause of spinal cord tumors. Some authors have reported cases in which severe injury capable of reaching the meninges was followed by symptoms continuing until the existence of a tumor at the injured point was established.

In many instances symptoms proved to result from tubercle, gumma, or echinococcus cyst, have followed immediately or soon after trauma.

It therefore appears that trauma may be the direct exciting factor, or may accelerate the growth, or reveal or intensify the symptoms of spinal tumors, or may have no connection whatever with an accidentally associated lesion.

Some of the main conclusions from various data are as follows: Solitary sarcoma occurs chiefly in young adults between 20 and 40 years. Diffuse sarcomas are practically limited to children or young adults. Gliomas are well distributed in the age periods. Among the extremes are Andersechs Sarcoma of the cord in a newborn infant, and Duesberg's Angiosarcoma in a man of 79 years.

Great majority of lipomas occur in children under 5 years. Neuro fibromas occur at all ages.

In children under 10 years a spinal cord tumor is, in order of frequency:

1. A solitary Tubercle.

2. Diffuse or unfavorable form of sarcoma.

3. Rarely—a lipoma.

After 40 years the benign tumors and favorable forms of circumscribed sarcomas are more frequent. Tubercle is distributed over all periods but gummas are rare before 30 years.

As a guide to the surgical treatment of spinal tumors an elaborate analysis of the symptoms has been required.

Bruns formulated the law that root pains should be referred to the segment from which the root arises, and not to pressure on the root in its intraspinal course. They may persist for years before medullary symptoms appear. They are usually very severe and persistent, continue for a long period of time, especially in extra dural growths but may eventually disappear when nerve trunks are destroyed. Widely disseminated pains point to a medullary lesion.

A zone of hyperesthesia extending somewhat above the tumor is often present in both meningeal and medullary growths. Vertebral symptoms, pains and tenderness, are more characteristic of vertebral than of cord tumors but may be present in both. Girdle sensations have little localizing value, and Hunt finds the root symptoms more reliable than local tenderness.

Motor pareses appear later than the pains, and a more extensive lesion involving two or three roots is required before paralysis occurs. Painful cramps may denote the onset of anterior root or horn lesions. Brown Sequard's paralysis continuing for a limited period only, may result from unilateral pressure, and is rather more frequently in extra medullary tumors, especially in the dorsal region, yet it occurs also with intra medullary growths. The location of the tumor is generally found to be 2-4 inches above the level of anesthesia and pareses may be due not to root pressure but to compression of cord well below the roots adjacent to the tumor.

A very important point brought out by Dr. Bassel is the fact that root pain precedes all other symptoms and is aggravated by coughing, sneezing, laughing and often alleviated by change of position. He has also covered very nicely the two groups of symptoms and the tests necessary to give the proper clues.

I would like to say a word about the duration of spinal tumors. The malignant vertebral tumors are the most rapid. The extremes for tumors diagnosed as Sarcomas vary from 1 month to 25 years. A tumor of more than three years duration is usually considered intra dural. The slowest courses are those of benign Fibroma (31 to 38 months). The diffuse Sarcomas may clinically resemble meningitis. Tubercle and gummas progress slowly, usually 4 to 6 years.

I have purposely omitted saying anything about extruded intervertebral disks, which discussion I shall take up following the paper on "Low Back Pain".

I again wish to commend Dr. Bassel for his excellent presentation.

## Newer Aspects of Low Back Pain

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A CONSIDERATION of primary importance in connection with the subject of pain in the lower part of the back is the fact that there are many causes for pain in this area. Most cases of low back pain are due, however, to lesions of the

lumbo-sacral joint or lesions of the sacro-iliac joint, the former being far the more common. Before making a final diagnosis one must rule out positively the more serious lesions such as tuberculosis of the spine, pyogenic infections of

the vertebrae, arthritis deformans, neoplasms of the spine, and spinal cord tumors. Backache due to gynecological causes must also be ruled out but it has characteristics which make it relatively easy to diagnose. The present discussion will be devoted almost exclusively to the matter of lumbo-sacral and sacro-iliac lesions and not those more serious ones just referred to.

#### DIFFERENTIAL DIAGNOSIS

Lesions of the lumbo-sacral and sacro-iliac joints can usually be told apart fairly easily by several differential points. The pain and tenderness are over the affected joint, which is of great help. Another important differential sign is the Gaenslen test which is done as follows. One leg is placed with the hip and knee flexed and is held in this position by the patient while the hip and knee on the opposite side are hyperextended by the examiner by placing the patient's buttock partly off the table or bed and holding the patient in such a manner that the leg can be hyperextended without the patient's falling off the table. This sign is practically always positive in lesions of the sacro-iliac joint and practically never so in lesions of the lumbo-sacral joint. In doing the test regardless of which side is flexed and which side hyperextended the pain will be referred to the affected side. The straight leg raising or Lesegue sign is of little value in making a differential diagnosis for it is frequently positive in lesions of both areas. Flexion of the lumbar spine is much more limited in lumbo-sacral lesions than in sacro-iliac lesions. Affections of either area may be accompanied by sciatica and this is not of much help as a differential point. Positive x-ray findings as will be described later are very valuable in making the differential diagnosis.

#### LUMBO-SACRAL LESIONS

Lesions of the lumbo-sacral joint are of several types and are of varying degrees of severity. A simple wrench of the muscles of the back due to a mild strain or a pain in the muscles of the back due to over-exertion from stooping or other occupation requiring an excessive amount of muscular exercise in this area will produce a backache of the type which all of us have experienced and which usually lasts a few days and goes away. This is not a severe backache and ordinarily will not bring a patient to a doctor. However, a fairly severe wrench involving the muscles or the ligaments may occur which will disable the patient a few days and then go ahead and clear up.

#### DOWNWARD SUBLUXATION OF THE FIFTH LUMBAR ON THE SACRUM

A very important lesion has been described recently which is of great significance and on which great emphasis should be placed as it is a very common cause of severe pain in the lower back. This is a downward subluxation of the fifth lumbar vertebra on the sacrum. This lesion may be seen also as a downward subluxation of the fourth lumbar vertebra on the fifth but this is much less

common. This should not be confused with a spondylolisthesis in which one vertebra slides forward on another but is instead a downward subluxation of the facets of the fifth lumbar (at the zygapophyseal joints) downward on the upper facets of the sacrum with an over-riding of the two facets. Spondylolisthesis has been recognized for some time whereas the downward subluxation above described has only relatively recently been described and its significance pointed out by Paul Williams. In order for this to occur the posterior portion of the intervertebral disc must necessarily be narrowed and this may be caused by an acute injury or it may come on as a gradual settling down of the posterior part of the fifth lumbar vertebra on the sacrum. In either case a small amount of the disc may protrude posteriorly but is not the primary cause of the symptoms. The cause of the symptoms is the irritation around the joint (facets) and there may be an accompanying sciatica due to the narrowing of the foramen for the spinal nerve and compression or irritation of the nerve root itself. The illustration (figure one) shows the over-riding of the lumbo-sacral facets, posterior narrowing of the lumbo-sacral interspace and a diminution in size of the foramen for the nerve root as compared with the one above.

The symptoms caused by downward subluxation of the fifth lumbar vertebra on the sacrum are usually typical. In the first attack the patient experiences a sudden severe catch in his back accompanied by localized pain of considerable severity described often as burning in character.



FIGURE ONE: Lumbo-sacral joint showing downward subluxation of the fifth lumbar vertebra on the sacrum, narrowing of the joint posteriorly and a decrease in the size of the foramen for the spinal nerve root, as compared to the foramen between the fourth and fifth lumbar.



The pain comes on immediately following some twisting or lifting motion usually. It may not be so very severe at first but in the course of a few hours gets worse. The pain continues for a variable time from days to weeks and gradually disappears. Recurrent attacks of pain of this same type are characteristic of the syndrome. A very significant fact is the rather common appearance of sciatica as an accompanying finding. In some cases the backache may have diminished down to the point where the sciatica is much the most prominent symptom and there may be some confusion as to whether or not it is a true primary sciatic neuritis. The latter is rare and most cases of sciatica are due to lesions in the lumbosacral area. There is tenderness over the lumbosacral joint on one or both sides about three-quarters of an inch from the spinous process and low down. The tenderness is usually only slight or moderate in amount but may be severe. There is limitation of flexion of the back and there may be a lateral twist of the spine (so-called list or sciatic scoliosis) in which the spine is curved to one side temporarily or for the duration of the pain in the lower back. The straight leg raising test is limited and often to a considerable extent. Neurological examination of the extremities will often reveal an inequality of the knee jerks and ankle jerks and sometimes diminution of skin sensation on the affected side due to the nerve root compression.

The x-ray is of great value in making a diagnosis of this condition for the lateral view characteristically shows a narrowing of the interspace between the body of the fifth lumbar vertebra and sacrum posteriorly as shown in figure two. Special antero-posterior x-rays are made at an angle with the direction of the x-ray through the lumbosacral interspace rather than straight



FIGURE TWO: Lateral x-ray of the lumbosacral joint showing the narrowing of the interspace posteriorly (retouched).



FIGURE THREE: Antero-posterior x-ray of the lumbosacral joint taken at an angle in the sagittal plane, showing the facets over-riding (retouched).

anterio-posterior. An x-ray made in this manner shows the relation of the facets of the fifth lumbar vertebra and the sacrum clearly and will demonstrate the facets of the fifth lumbar subluxated downward on the sacrum. Figure three shows this quite clearly. The lesion is usually bilateral but may occasionally be uni-lateral.

The treatment varies with the severity of the symptoms and the length of time they have been present. In acute cases rest in bed for one to three weeks is desirable. The patient is put into bed in a flexed position, and a hospital bed with a back rest and a knee support is ideal. If this cannot be obtained a substitute may be arranged with a chair for a back rest and many pillows under the knees. Postural exercises to strengthen the muscles which flatten the lower back are begun at once in bed and continued after the patient is up. The exercises are done in bed or on a hard surface such as a padded floor. The first consists of lifting the buttocks up off the surface of the bed with the knees flexed and the second flexing the knees up on the abdomen as much as possible by grabbing them and pulling them forcibly toward the body. The third is done standing against a wall and in it the patient practices rolling his pelvis forward and upward in such a manner that he flattens his lumbar spine against the wall. These exercises are begun gradually and gradually increased to twenty-five times twice a day which is kept up for a period of at least four weeks and longer if the patient has any symptoms. On the slightest recurrence of symptoms the exercises are restarted and are kept up until he is symptom free.

If the patient does not respond to conservative treatment he should be placed in a cast in a flexed position which is done by having him stand bent over a table and resting upon it, with the lumbar

and lower thoracic spine flexed well while the cast is applied. A brace may be used to keep his back in this position but this is not always practicable as the brace is somewhat difficult to make unless there is a good brace maker handy. If all else fails and the patient continues to have severe symptoms a fusion operation should be done on the spine in the affected area and at the same time the bone should be removed from around the foramen to relieve the compression of the nerve root. Usually the third, fourth, and fifth lumbar are fused to the sacrum. This operation is a rather radical procedure and should be avoided if possible in industrial cases as it is usually very difficult to get the patient back to work after a spine fusion operation. Usually, however, the prognosis is good.

#### PROTRUDED INTERVERTEBRAL DISC

No discussion of the lesions of the lumbo-sacral spine would be complete without at least mentioning protruded intervertebral discs and hypertrophy of the ligamentum flavum as a cause of low back pain and sciatica. Unfortunately these cases resemble very closely those of downward subluxation of the fifth lumbar on the sacrum but may be distinguished by the fact that they do not improve under conservative treatment and positive neurological findings are much more common. When such a case is suspected a diagnosis may usually be made by doing an air injection and making x-rays (air spinograms). With the patient on a tilting x-ray table about 40 c.c. of spinal fluid are removed and a similar amount of air injected with the patient placed head downward at an angle of 30 or 40 degrees to keep the air in the sacral end of the spinal canal. Anteroposterior and lateral stereo x-rays are made which in at least 75% of the cases will show the outline of the dura very plainly and a positive diagnosis of the presence or absence of a protruded intervertebral disc (or hypertrophy ligamentum flavum) may be made. This is fortunately a relatively rare condition and unfortunately a surgical one as removal of the offending disc is the only thing which will assure permanent relief. Here again these patients constitute a difficult situation if the case is an industrial one, for following the operation it is not easy to get them back to hard labor.

#### SACRO-ILIAC LESIONS

Of the lesions of the sacro-iliac joint a sprain is the most common. The old conception of the sacro-iliac joint slipping has changed for the joint is capable of very little motion. What does happen is that the ligaments around the joint are sprained or strained and produce pain for the length of time which it takes them to get well. Simple rest in bed is usually the best method treatment for these lesions and if they are mild sometimes this is not even required. The prognosis in this condition is ordinarily good but it is occasionally necessary to immobilize the patient in a cast or even do a fusion operation if all else fails to relieve the symptoms. Fortunately severe and lasting lesions of the sacro-iliac joint are uncommon.

#### CONCLUSION

In conclusion it should be said that painful lesions of the lower back rather sharply divide themselves into those which are severe and those which are not. The treatment for the mild lesions is usually simple and consists chiefly of rest, bed rest sometimes being necessary. The use of heat in all lesions both severe and mild is to be encouraged for it relieves the pain and hastens recovery. In those lesions of the lower back in which there is a good deal of pain and disability it is very important to make an accurate diagnosis and institute appropriate treatment. Many of these cases are a downward subluxation of the fifth lumbar vertebra on the sacrum and proper treatment will in most cases produce relief of symptoms.

Roberts Banner Bldg.

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## The Problem of Tuberculosis in New Mexico

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THE development of New Mexico in the past fifty years has been centered about the ebb and flow of the health seeker. Many of them, having made a cure of their tuberculosis, have remained here, raised families, and become established in some occupation or business.

\* This study was made through the cooperation of the Maytag Research Laboratory with the New Mexico Bureau of Public Health and the New Mexico Tuberculosis Association.

For many years tuberculosis has been recognized as a highly infectious, communicable disease being transmitted through direct contact of one person with another. Throughout the United States, there has been a marked decline of the mortality rate of tuberculosis, so that, in the registered area of the country the death rate is about one-eighth of what it was forty years ago. This



decline has been most marked in states where campaigns have been carried on to prevent exposure by early recognition of the disease and isolation of the positive sputum cases. In New Mexico the number of deaths from tuberculosis has decreased from 191.3 in 1929 to 91.2 per 100,000 population in 1939. This mortality rate is still almost three times higher than that for the country at large.

The mortality rate of pulmonary tuberculosis in the Southwest is said to be excessively high, because of the large number of non-residents, who have migrated here for the purpose of seeking health. The numerical decline in New Mexico cannot well be explained by any measures which aim at prevention of infection.

Pulmonary tuberculosis is a universally distributed communicable disease, in which infection has a definite relationship to mortality. Tuberculin testing done in New Mexico over a period of five years, reveals a high percentage of tuberculosis infection. The incidence of tuberculous infection among Anglo and Spanish American is practically the same in the different age groups, and after the age of 24 has been reached, tuberculinization of the population is almost universal.

In view of the high rate of infection, and because the death rate from tuberculosis is the best figure obtainable for determining the force of tuberculosis in a community, an analysis of the

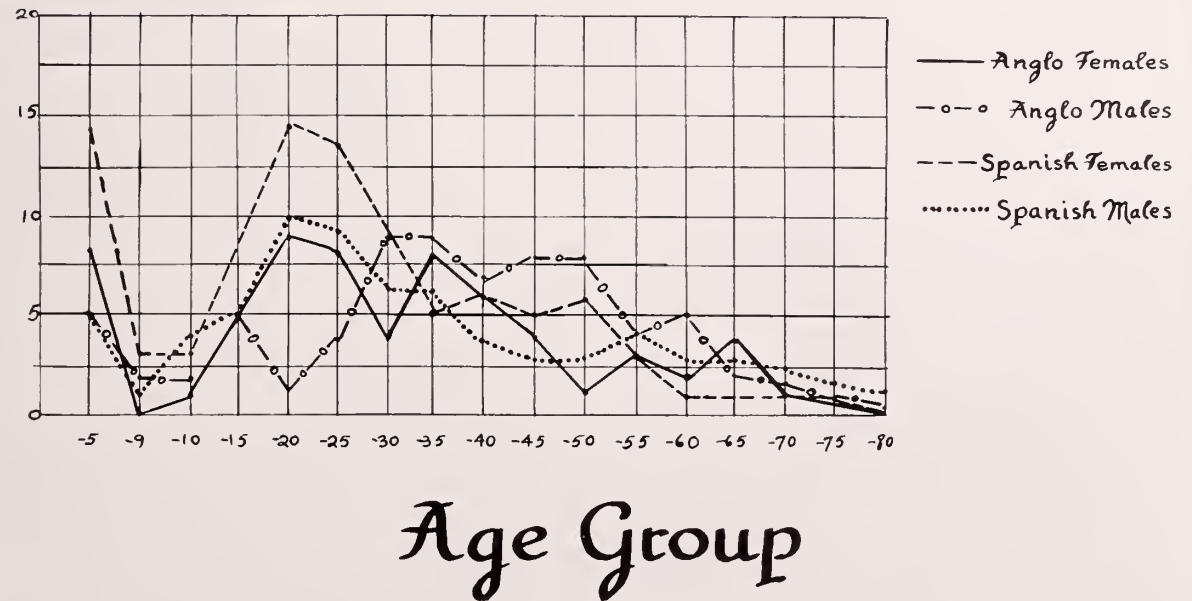
tuberculosis mortality for 1935-1939 inclusive was made. Special consideration was given to the effect upon the mortality rate by non-residents and natives in the different age and sex groups. The object of this study is to determine, whether the decrease of the tuberculosis death rate in New Mexico is apparent or real.

The population of New Mexico exclusive of Indians (394,863) is mostly (52.5%) made up of the descendants of the Spanish conquistadors. The remaining 46.5% are of European descent, largely Nordic. 1% are Negroes. In this paper, these two groups are referred to in the local expression of "Spanish American" and "Anglo". Both Anglos (as the term has been explained) and Spanish may be native to New Mexico. In general the Spanish Americans have descended from those who have occupied the Southwest for centuries, and Spanish people predominate among those who are native. The non-native group is made up of those who have come to New Mexico (a) in search of health or (b) for business reasons. Over the five year period studied, there were 2161 deaths from all forms of tuberculosis, i.e. 1249 in non-residents and 912 in natives. The number of deaths from tuberculosis among Negroes is so small that it is not considered in this discussion. There were only 19 deaths in the group of native born Negroes and 89 in the non-resident group.

Table I. shows that the mortality rate is only

# CHART 1

Average Age Distribution of Tuberculosis Deaths in New Mexico 1935-1939, in Natives, According to Age, Sex, and Race



15.6% higher in the non-resident than in the native group, with evidence of a decrease in the former and a rise in the latter. The decline of the death rate in the number of migratory health seekers is due to the fact that with every year fewer of them have come here.

TABLE I.  
TUBERCULOSIS DEATHS IN NEW MEXICO  
ALL FORMS AMONG NATIVE AND NON-NATIVE  
POPULATION 1935-1939

Year	Deaths	Percent	Deaths	Percent	Deaths	Percent
1935.....	192	41.2	274	58.8	466	100
1936.....	199	44.2	251	55.8	450	100
1937.....	199	41.5	279	58.5	478	100
1938.....	151	38.4	242	61.6	393	100
1939.....	171	45.7	203	54.3	374	100
Total.....	912	42.4	1249	57.8	2161	100

Of the 1249 tuberculosis deaths in the non-resident group 40% died in less than one year after their arrival.

The problem of tuberculosis control in the State of New Mexico is a difficult one, because little or no provision is made for either the native or for the non-resident tuberculous sick. Half of this group are married and bring their dependents with them. Many try to establish homes, live in auto courts or cheap convalescing homes. The

great majority are far advanced cases, who cannot afford the benefits of proper sanatoria and medical care. They try to make the cure on their feet, and sow the seeds of infection most abundantly on a very fertile soil.

Of the 912 deaths in the native population, 68.6% were Spanish American, 29.3% Anglos and 2.1% Negroes. The ratio of deaths in this group is 1 Anglo to 2.3 Spanish Americans. The mortality in the Spanish American female is very high, as shown in Chart I.

For each tuberculosis death in the native population, there are five cases in the community. These people represent the low wage group, with poor housing conditions and marked over-crowding. Fifty-eight per cent are married and usually have large families. The incidence of tuberculous infection and the disease of tuberculosis is low among the Spanish Americans until they come into the cities and large villages, selected for residence by the health seekers from other states. Many work as domestics, and often the hazard of exposure to tuberculosis with massive infection is great.

## CHART 2

Average Age Distribution of Tuberculosis Deaths in New Mexico 1935-1939, Separate for Natives and Non-Residents Compared with General Curve of Tuberculosis Deaths in United States Registration Area

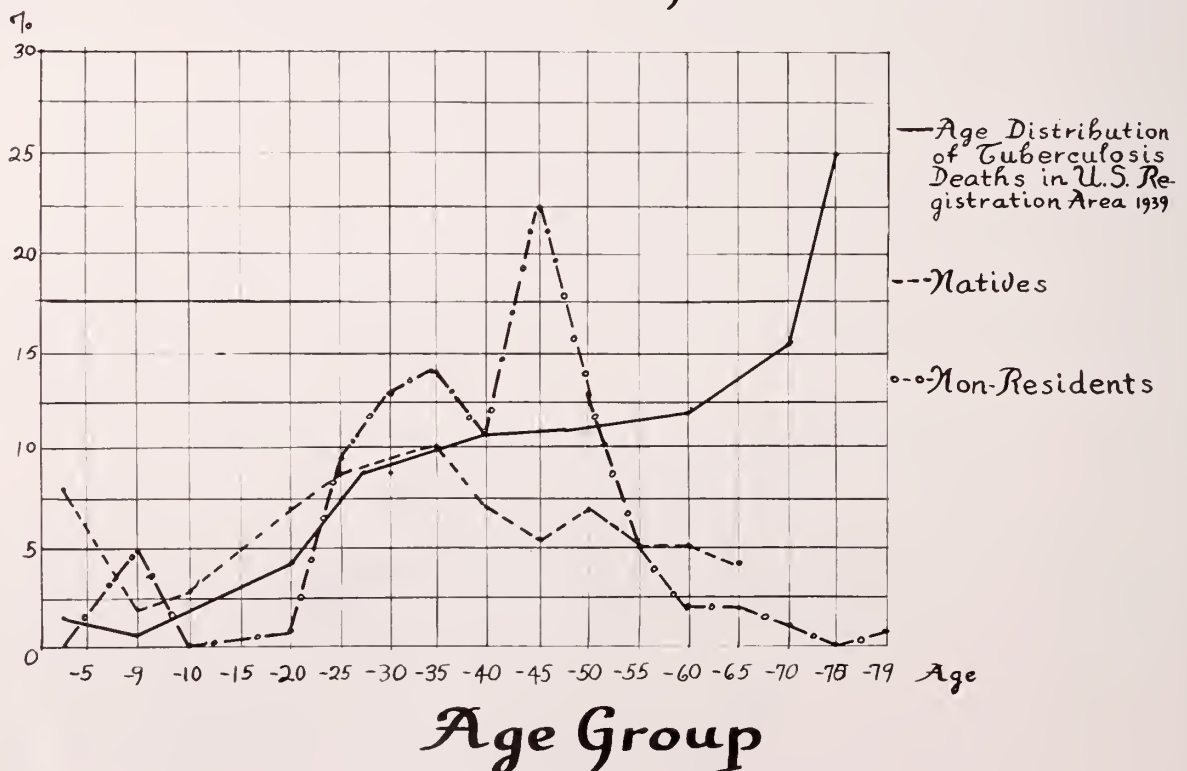


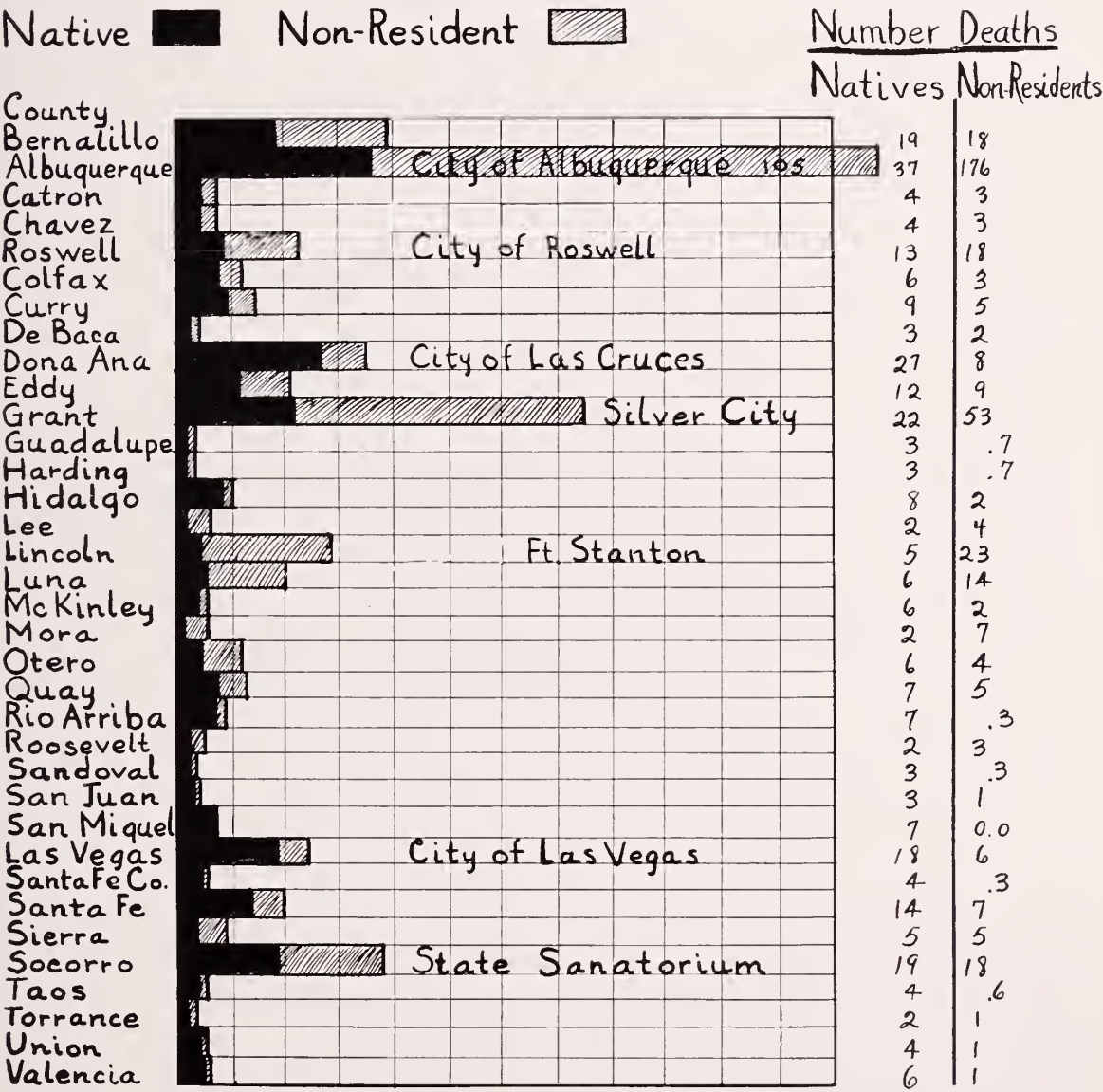


TABLE II.

TUBERCULOSIS DEATHS ALL FORMS ORIGINATING IN NEW MEXICO 1935-1939

Year	Anglo					Spanish					American-					Negro					No.	%
	F	%	M	%	Total %	F	%	M	%	Total %	F	%	M	%	Total %	F	%	M	%	Total %		
1935.....	30	15.8	42	21.9	37.7	57	29.6	62	32.2	61.8	1	.5	0	0	.5	1	.5	0	0	.5	192	100
1936.....	28	14	41	20.7	34.7	80	40.2	48	24.1	64.3	1	.5	1	.5	1	1	.5	1	.5	1	199	100
1937.....	17	8.8	30	15	23.8	74	27.1	74	37.1	74.2	1	.5	3	1.5	2	1	.5	3	1.5	2	199	100
1938.....	18	12	22	14.8	26.8	56	37	47	31.1	68.1	1	.6	7	4.5	5.1	1	.6	7	4.5	5.1	151	100
1939.....	15	8.9	24	14.2	23.1	72	42.1	54	32.7	74.8	1	.5	3	1.7	2.2	1	.5	3	1.7	2.2	171	100
Total.....	108	11.9	159	17.4	29.3	339	37.2	285	31.4	68.6	5	.5	14	1.6	2.1	5	.5	14	1.6	2.1	912	100

Chart 3



Yearly Average of Deaths from Tuberculosis in New Mexico by Counties over a Five Year Period 1935 - 1939

When one member of a family develops tuberculosis with cavitation, the disease can spread rapidly through a household. In the native group mortality from generalized tuberculosis is 10.5%, which is high when compared with the mortality for the entire country. The problem is not one of resistance or immunity, but a socio-economic one, in which poverty plays a heavy role. From these family foci or tuberculosis, massive and repeated spread of the organism does occur, and keeps the disease constantly on the increase.

#### DISCUSSION

The data presented shows that the control of tuberculosis in New Mexico is a public health problem of major importance. If further reduction in the incidence of tuberculosis in New Mexico is to be brought about, a program of early recognition of the disease and adequate hospitalization and medical care for the natives and non-residents must be carried out.

The statistics were obtained from the Hollerth system of punch cards. Unfortunately this system of tabulation was only started in 1935. The

data collected over this five year period reveals that 42.4% of the deaths resulted from tuberculosis originated in New Mexico, 57.6% of the deaths were from cases contracted outside of the state. It is apparent that the number of deaths from tuberculosis originating in the state, especially among the native population, is high and increasing.

With the defense program of the nation under way no conscript from New Mexico should therefore be accepted into the army without at least a fluoroscopic examination or better yet, tuberculin testing and chest x-rays of the positive reactors.

#### CONCLUSION

The data presented shows that the incidence of tuberculosis originating in the state is increasing. The decrease in the mortality rate from tuberculosis in New Mexico from 191.3 in 1929 to 91.2 per 100,000 population in 1939 is only apparent and not real.

Southwestern Presbyterian Sanatorium

## Report of Severe Reaction Following Use of "Monolate" as a Sclerosing Solution

HOWARD D. COGSWELL, M. D.

CHARLES A. THOMAS, M. D.

Tucson, Arizona

THUS far no perfect sclerosing solution has been developed for the treatment of varicose veins by injection. Reactions have been reported following the use of every known sclerosing agent. Sodium salicylate, solutions of sodium chloride, quinine, and invert sugars have been shown to produce reactions of more or less severity.<sup>1,2,3,4</sup> Sodium morrhuate, one of the newer solutions, is a mixture of saponified fatty acids of cod liver oil and has been shown to be a very effective sclerosing agent. There have been, however, severe and even fatal reactions reported following the injection of this drug.<sup>5,6,7</sup> This has been thought to be probably due to an anaphylaxis, as result of an acquired sensitivity to the cod liver protein radical present in the substance.<sup>6</sup> For this reason attempts have been made to develop a sclerosing substance free from nitrogenous impurities to eliminate allergens. As a result monoethanolamine oleate (monolate) was developed. This is a soap of monoethanolamine and oleic acid, made of synthesized chemicals and theoretically eliminates all nitrogenous materials. Early reports regarding experimental and clinical use of this drug have been encouraging. Glasser<sup>8</sup> reported 550 injections without an allergic reaction. Meyer<sup>9</sup> gave 345 injections and states "There were no cases of sloughs or any evidence of allergic reactions."

Judging from these reports it appears that monolate is a safe drug to use as a sclerosing solution. During the past year two reactions have

been reported in the literature following the use of monolate. One a "bad reaction"<sup>7</sup> and one, a fatal reaction<sup>10</sup>. In both of these cases sodium morrhuate had been injected intravenously over a period of several months before monolate had been used. For this reason it might appear that the reactions manifested may have been due wholly, or in part, to a sensitivity developed by sodium morrhuate. This may have been a factor in these cases but in the following case no sodium morrhuate had been previously given.

#### CASE REPORT

Mrs. R. G., a ranch woman, age 64, was first seen on January 3, 1940, complaining of a painful ulcer on the medial surface of her right lower leg. She stated that the ulcer had been present intermittently for the past four years. An eczematoid lesion had occasionally been present several years previous to the appearance of ulcer. Similar eczematoid lesions were intermittently present on her forehead, both wrists, and the tibial surface of the left leg. The patient had never had asthma, hay fever, or urticaria. Examination showed extensive varicosities of the right leg; and small varicosities were present in the left leg. A double positive Trendelenberg test, a normal Perthes test, and a normal peripheral arterial circulation was present in the right lower extremity. A marked cellulitis was present surrounding the ulcer and for this reason it was deemed advisable to institute conservative treatment. A rubber sponge was placed over the ulcer and was compressed with an "ace" bandage. The patient was advised to elevate the affected leg as much as possible while at home. She lived on a ranch 140 miles from Tucson so it was difficult



for her to appear at the clinic at regular intervals. She was again seen on January 20th at which time the ulcer had healed. At this time a mild eczematoid lesion was noted extending over the tibial surface of the right leg. This was weeping but little. The patient was admitted to the hospital on January 29th at which time a ligation and an injection of three c.c. monolate of the long saphenous vein was done. A firm thrombus of the vein resulted. She was again seen in the office on February 3rd at which time two ccs. monolate were injected into varicosities of the lower right leg with no reaction. Two ccs. were again injected on February 7, 1940 and the patient was instructed to return in five to six days for further treatment. Her next appearance was on February 17, 1940, an interval of ten days. She stated that due to the distance she had to travel it had been impossible to return when requested. On this day three ccs. of monolate was injected without an immediate reaction. An appointment was given for her to return in the next five to six days, but she was unable to appear until March 1st, an interval of twelve days. Another two ccs. of monolate were injected without an immediate reaction and she left the clinic about fifteen minutes following the injection. Approximately twenty minutes after her departure the patient was rushed back into the office carried by two of her relatives. She was extremely dyspneic. Her eyelids were almost completely closed due to an urticaria which extended over the entire face. She was cyanotic, unable to support herself, and complained of extreme weakness and itching of her entire body. Her pulse was slow and weak. Her blood pressure was not taken at this time. She was immediately placed in bed and given ten mms. of 1:1000 epinephrine hydrochloride. About ten minutes following this medication her symptoms were slightly improved and percursory examination revealed that a general urticaria involving at least ninety per cent of her body was present. Her pulse was 110 and her blood pressure was 105/60 (patient previously had been treated for a hypertensive cardiorenal vascular disease and usually had a blood pressure of 175/120 to 185/125). The epinephrine hydrochloride was repeated fifteen minutes after the first dose and the patient was observed in the clinic for a period of three hours. At the end of this time her cyanosis had disappeared, her urticaria was diminished at least fifty per cent and the blood pressure had mounted to 150/100. The dyspnea which had been asthmatic in type abated in about one-half hour after last administration of epinephrine hydrochloride. On questioning the patient she stated that she had been dyspneic and developed a mild urticaria following her injection on February 17, 1940. It was an error on our part not to have learned of this before giving the last injection of monolate.

The patient was again seen on March 21, 1940 at which time she stated that the "itching and swelling" had persisted to an irritating degree for four days following the reaction. There were a few small varicosities remaining, but the patient and ourselves were well satisfied to leave them unmolested by further injections.

#### COMMENT

In spite of the fact that nitrogenous substances are not present in monolate the above case showed obvious signs of severe anaphylactic reaction. We believe that this was due to a "drug allergy" as described by Sulzberger<sup>11</sup>. This is not an unusual form of allergy as such reactions are seen in certain individuals after the ingestion of

such usually innocuous drugs as aspirin, quinine, pheonl-sulphonhalein, etc. It is reasonable to assume that the patient became sensitized to one of the chemicals used in the preparation of monolate. Due to the prolonged intervals between her treatments ample time was afforded for a drug sensitivity to develop. The reaction was of enough severity to cause us great concern and possibly could have been fatal if epinephrine had not been administered immediately. We have not discontinued the use of monolate as a sclerosing solution but are now much more cautious in its use. Before its administration we now: 1. Determine whether or not the individual has a history of allergic diseases, i.e.: hay fever, asthma, eczema, etc. 2. Determine if there has been a previous intravenous injection of sodium morrhuate or monolate. 3. Give a small initial dose ( $\frac{1}{4}$ - $\frac{1}{2}$ c.c.) and have the patient lay supine for one-half hour after each injection, during which period they are closely observed. 4. Question the patient closely regarding reactions following the previous injection before each treatment is given. 5. Never give over three c.c.s of monolate at a treatment. 6. Advise all patients to return immediately if any signs or symptoms of a reaction are suspected. 7. Insist that treatments be given at close enough intervals to prevent the building up of an allergic state, i.e.: becoming sensitized. 8. Do not elevate the extremity following the introduction of monolate. This allows the solution to remain in contact with the intima of the varicosity for a longer period of time and also prevents a rapid emptying of the solution into the general circulation. 9. Give no further treatments using the same substance if a reaction has occurred. Sodium morrhuate is never given either in conjunction with or following the treatment with monolate.

Such rules probably appear elementary but the experience of one reaction and the possibility of a fatal mishap tend to make one cautious. The laity consider varicose "vein shots" a minor procedure, but one fatality in a community of this size could intimidate many individuals to the point that they would refuse any form of intravenous treatments.

Thomas-Davis Clinic.

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New Mexico Medical Society  
Southwestern Medical Association  
El Paso County (Texas) Medical Society

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## FOR SHAME!

Early in this, the last month of the year, an old physician visited our office and handed us this typewritten statement:

We, the undersigned, contribute the sum opposite our names toward the funeral and burial expenses of Dr. \_\_\_\_\_ who for many years was a successful practicing Physician and Surgeon in Marion, Alabama.

During the past four years Dr. \_\_\_\_\_ was a resident of El Paso and because of financial adversities he was without funds and died in the City County Hospital.

\_\_\_\_\_ were most liberal in that they gave the Doctor a nice burial in Restlawn Cemetery at a nominal cost of only \$27.50.

Here is the story: On October 26, 1940, in the charity ward of the El Paso County Hospital there passed away, terribly alone and friendless, a man who had given his life in the practice of what is often called the most honorable profession of them all. No friends were there, no loving family stood by during the last journey of this 76 year old man. Just an orderly, a strange young interne, and maybe an overworked nurse or two. Death introduced the old doctor to these new acquaintances—they hardly had the time to get really well acquainted—this little group at the death time of a doctor. But then new friends now would be of small comfort to an old man who had been so long without them. He needed friends years before that, when he was existing from day to day by the great-hearted grace of street acquaintances. Where stood his brothers in medicine? Were they solidly and collectively his staunch friends? To the shame of our profession, which

the old man had so long honored, we were not there in the day of need. And why weren't his fellows in mercy there? Because, as yet, the organization to which he paid hundreds of dollars in dues, to which he gave a lifetime of long years in service, has not set up a pension plan whereby oldsters and those disabled may receive help in the days when the need is upon them. The reason is not plain why year after year the House of Delegates of the American Medical Association refuses to study and sponsor such plans as have been proposed to remedy this tragic situation. The dentists have such a plan, the railroad trainmen do, and so do the union printers. Some say that's "socialism"—and Lord, we can't have that! Well, the answer must be that socialism or not, the shame of complacency and smugness cannot be erased by shouting catch phrases.

How about state societies? What consideration have they given to the need of a plan whereby young physicians pay, during the years of their greatest earning power, into a fund which will eventually prove a life-saver and a face-saver as well to many of them? An organization of New York doctors has founded an old physician's home! Nearly every county in nearly every state likewise has a poor farm!

So the old man finally got a "nice" funeral for \$27.50! But for the small donations of a few individuals, plus the kindness of a certain mortuary, a pauper's burial would have taken place, and this story would not have been written. Some of you older physicians who right now are troubled with rent due—what do you think of this shameful narrative? Some of you younger votaries at the shrine—might not this story be yours some day—but for the grace of God? Well, then, what are you going to do about it?

Let the demand roll into the Councils of our medical organizations that the time has come to study this problem motivated by only one purpose—to solve it, once and for all time. The solution to come—and come it must—cannot save the old man of our story, nor can it help the bitterness and tragedy of those uncounted thousands with similar misfortune in the past. They are gone now. They had no spokesman in the days of their need—no voice save that of the humble supplicant, the beggar for favors. But those tragic brothers of ours soon to face sorrowful days—what of them? Have they a spokesman? The answer to that lies with us, the living—with us, the warmly clad—with us, the young—with us, the full fed—with us, the payers of dues to our medical societies—with us, who may be needful ourselves some day.

There is nothing new about enterprises such as mutual insurance. In a broad sense all insurance is mutual. So is government itself. The theory of collective effort is by now conservative enough to have lost its devil's horns. Furthermore, let the doctor begin to consider himself a bit, and,



through our powerful central organizations, let the doctor's concern for himself be implemented.

The needs of thousands of American physicians are crying for attention. Who shall hear them? War or no war, many loyal members of organized medicine will need help in the coming year. And to emulate Candide, who thought that this was the best possible of worlds, simply will not be answering the problem. Organized medicine must face this reality sooner or later—and if soon enough, such a story as this need never again be written. God speed the day!

### THE TUCSON SESSION

One of the best-attended sessions in the long life of The Southwestern Medical Association was held in Tucson November 21-23. Headquarters hotel was The Pioneer. The entire mezzanine floor was turned over to the association for exhibits, registration, section luncheons, general sessions, banquets. Admirable facilities were afforded by the hotel in that courteous, highly efficient service on the part of employees helped expedite one of the most smoothly managed medical meetings in the history of the association. Space was adequate, conveniently placed. All who attended were highly pleased with the attention accorded them by the hotel. With which plug for a well deserving institution, other features of the meeting can be taken up.

Commercial exhibits were splendidly arranged. Although limited in number by available space it was felt that these exhibits and demonstrations constituted one of the more valuable portions of the meeting. New drugs and new instruments were there for inspection and instruction in their use. Large crowds seized all opportunities afforded to visit the booths. The following exhibited:

A. S. Aloe Company.  
Aungers Arizona Brace Shop.  
Ayerst, McKenna and Harrison (U. S.) Ltd.  
American Optical Co.  
Blair Surgical Supply Company.  
Ciba Pharmaceutical Products.  
Cutter Laboratories.  
Don Baxter and Company.  
Frederick Stearns & Company.  
General Electric X-ray Corporation.  
Holland Rantos Company.  
John Wyeth & Brother.  
Elli Lilly & Company.  
Mead Johnson & Company.  
Pelton & Crane Company.  
Sandoz Chemical Works, Inc.  
Southwestern Surgical Supply Company.  
The Borden Company.

Scientific exhibits were placed in a room adjoining the registration space. These were locked up at night, thus preventing the possible loss or mutilation of valuable material during the hours when none of the committee was about.

Chairmen of Tucson committees who did such a splendid job in staging the meeting were:

John Mikell, Scientific Exhibits.  
Meade Clyne, Reception.  
J. B. Littlefield, Hotel Arrangements.  
R. W. Rudolph, Entertainment.  
C. A. Thomas, Toastmaster.  
W. G. Shultz, Finance.  
W. Stanley Kitt, Finance.

A beautiful souvenir program containing pictures of the speakers plus nearly a hundred full page photographs of Tucson and its territory was handed each registrant. This was quite the most unusual, best program ever compiled and distributed by the association.

Dr. Orville Egbert, El Paso, presided over the general sessions in the main ball room. These meetings began on time, were very well attended. Each noon, save the last day, the members were divided into sections and attended the luncheon of their choice. These luncheons were held in various small dining rooms off the mezzanine floor. Presiding over each was one of the guest speakers. Informal discussion and question periods took place during the meal. Each luncheon was crowded daily. On Saturday the entire session was brought together, and the annual business session followed the luncheon.

Departing from custom of past years, the dinner dance was held on the first night. Appropriate recognition of Thanksgiving was rendered. Dr. C. A. Thomas of Tucson presided over this function. The buffet supper was held on the second night. Pima County Medical Society was host. Dr. H. W. Kohl, president of the society, presided over the raffle of prizes donated by the commercial exhibitors. Preceding the two evening affairs a number of private parties were held.

The Southwestern Academy of Eye, Ear, Nose and Throat, under the direction of the president, Dr. Dake Biddle of Tucson, met simultaneously with the association. At their annual election the following officers were named:

President—Franklin H. Maury, M. D. Tucson, Arizona  
Secretary—A. C. Cruthird, M. D. Phoenix, Arizona

The Board of Managers of Southwestern Medicine met for their annual session on the afternoon of November 21. The chairman, Dr. Paul Gallagher, El Paso, presided. Reports of the Editor and the secretary, Dr. D. F. Harbridge, Phoenix, were heard. Dr. W. B. Cantrell of Gallup, New Mexico was elected to be chairman of the Board for 1941. Dr. D. F. Harbridge was re-elected secretary and treasurer. Dr. M. P. Spearman, El Paso, was re-elected Editor-in-Chief of Southwestern Medicine.

The following now constitute the Board of Managers:

Arizona State Medical Association:  
J. D. Hamer, M. D. Phoenix, Arizona  
D. F. Harbridge, M. D. Phoenix, Arizona  
New Mexico Medical Society:  
W. B. Cantrell, M. D. Gallup, New Mexico  
Geo. T. Colvard, M. D. Deming, New Mexico  
Southwestern Medical Association:  
R. W. Mendelson, M. D. Albuquerque, N. M.  
R. B. Homan, M. D. El Paso, Texas  
El Paso (Texas) Medical Society:  
Paul Gallagher, M. D. El Paso, Texas  
L. O. Dutton, M. D. El Paso, Texas

The last night of the meeting was enjoyed by especially the New Mexico registrants. A section of the University of Arizona stadium was reserved for the visiting physicians to watch a surprising football team from the University of New Mexico upset the University of Arizona in their annual

game. Most of the prizes in the annual Saturday afternoon golf tournament were won by Tucsonians.

The annual business session was held Saturday noon. The nominating committee was composed of Drs. W. W. Waite, Le Roy Peters and E. Payne Palmer. Nominated and elected were the following to serve for the next year:

President-elect.....	Dr. C. A. Thomas, Tucson
1st Vice-president.....	Dr. K. D. Lynch, El Paso
2nd Vice-president.....	Dr. J. W. Hannett, Albuquerque
Secretary-Treasurer.....	Dr. Louis Breck, El Paso
Associate Editor of Southwestern Medicine.....	Dr. Heinz Haffner, El Paso
Members Board of Managers Southwestern Medicine.....	Dr. R. B. Homan, El Paso
	Dr. R. W. Mendelson, El Paso

El Paso was chosen to be the 1941 meeting place.

## COMMUNICATIONS

Sir:

I am directed by the Surgeon General to inform you that Authors' reprints are gratefully received at the Army Medical Library. They are placed in a special collection catalogued by author and thus form a ready bibliography of the work of any given writer and a valuable supplementary source of material when the volume of original publication is temporarily unavailable at the bindery or on loan.

Editorial notice of this collection would be much appreciated.

Very respectfully,

HAROLD W. JONES,  
Colonel, Medical Corps,  
United States Army.  
Librarian,  
Army Medical Library.

## NEWS

### General

The Department of Obstetrics and Gynecology of the University of Chicago and the Chicago Lying-in Hospital through the cooperation of the Children's Bureau, U. S. Department of Labor and the Illinois State Department of Public Health offers five postgraduate courses of four weeks each between January 6 and June 21. The beginning dates of each are: January 6, February 10, March 17, April 21 and May 26. All the members of the department and all services and units of the institution participate in the instruction. Only a limited number of postgraduate students are accepted for each period. A deposit of \$25.00 is required, of which \$10.00 is returned on completion of the course. All communications

should be addressed to: Postgraduate Course, 5848 Drexel Avenue, Chicago, Illinois.

Medical technicians experienced in surgical and x-ray work are needed by the War Department. The United States Civil Service Commission has announced an examination to fill these positions in the following grades and optional subjects: Senior medical technician (roentgenology), \$2,000 a year; medical technician (roentgenology, and surgical), \$1,800 a year; assistant medical technician (roentgenology, and surgical), \$1,620 a year. The salaries are subject to a retirement deduction of 3½ per cent.

Applications must be on file with the Commission's Washington office not later than November 28, if received from states east of Colorado and not later than December 1, 1940, if received from Colorado and the states westward.

Applicants must have completed a 4-year high school course, unless they pass a written general test, and in addition, they must have had responsible experience in surgical duties in an operating room or clinic, or in x-ray work including x-ray photography and posturing, and in the installation and maintenance of x-ray apparatus. Appropriate college study may be substituted for part of the required experience. With the exception of those who have not completed the high school course, applicants will not be given a written test. All competitors will be rated on their qualifications as shown in their applications and on corroborative evidence.

Detailed information regarding the examinations and the proper application forms may be obtained from the Secretary of the U. S. Civil Service Examiners at any first- or second-class post office or from the United States Civil Service Commission, Washington, D. C.

Arrangements have been completed for the third annual Congress on Industrial Health sponsored by the American Medical Association, which will be held Monday and Tuesday, Jan. 13 and 14, 1941, at the Palmer House in Chicago.

These meetings are open to all physicians and others interested in the industrial health movement. There is no registration fee.

### El Paso

At a recent meeting of the El Paso County Medical Society on November 25, the following program was given:

1. Cortical Insufficiency—Dr. J. M. Scott.
2. Perforated Peptic Ulcer—Dr. Heinz Haffner.

The session was held in the Tea Room, Hotel Cortez. About 65 members were present, plus a number of medical officers from Wm. Beaumont General Hospital, U. S. Army.



The City-County Hospital Staff met November 20 at the hospital. Following dinner the program was:

1. Adhesions and Volvulus of Small Intestine—Drs. Parker, Holt, Waite.
2. Typhoid Fever (case report)—Drs. Parker, McCamant.

The session was presided over by Dr. J. Mott Rawlings, chief of staff.

Annual election of officers was substituted for the scientific program of the December 3 meeting of the staff of Hotel Dieu Sisters' Hospital. Luncheon was served.

The regular monthly dinner of the staff of the Southwestern General Hospital was held on the evening of November 28 in the auditorium of the hospital. The scientific program follows:

1. Teratoma of Testes with Metastases to Lung—Dr. W. R. Curtis.
2. Unusual Clavicle Injuries—Dr. Dave Cameron.

A meeting of the El Paso Tumor Clinic was held Tuesday, November 12, 1940, at 1:00 p. m. at City-County Hospital. The following cases were considered: 1. tumor of chest below axilla; 2. tumor of scalp; 3. sarcoma of eye; 4. tumor of leg; 5. tumor of breast, two cases. Dr. W. W. Waite presided as chairman.

The El Paso County Medical Society met November 11, 1940, at 8:00 p. m. in the tea room of Hotel Cortez. The program was as follows:

"Modern Ophthalmology and Otolaryngology"—Dr. W. E. Vandevere.

"Bone Marrow Aspiration for Diagnosis of Blood Dyscrasias"—Dr. M. S. Hart.

The regular Staff meeting of the Hotel Dieu Sisters' Hospital was held Tuesday, November 5, 1940, at 12:10 p. m. in the auditorium of the Nurses' Home. Luncheon was served. The scientific program was as follows:

"Sarcoma of the Forearm, Child, Age Five Years"—Dr. J. L. Murphy.

Discussion by Drs. J. W. Cathcart and W. W. Waite.

"Fracture of the Patella"—Dr. Louis Breck.

Discussion by Dr. H. H. Varner.

A meeting of the El Paso County Medical Society was held Monday, October 28, 1940 at 7:00 p. m. at William Beaumont General Hospital. Members of the County Society were guests of Col. Edwards and Staff. Dinner was served at 7:00 p. m. in the Patients' Mess. The scientific program was presented at 8:00 p. m. by the Staff of William Beaumont General Hospital as follows:

"Multiple Sclerosis; Case Report"—Captain J. J. Hornisher, M. C.

"Endocrine Dwarfism; Case Report"—Captain W. R. Garner, Med. Res.

"Arthritis, Acute, Suppurative, Severe, of Left Hip, Complicated by Staphylococcus Septicemia, Case Report and Presentation of Patient"—Captain C. W. Hardy, M. C.

The Lovelace Clinic, Albuquerque, New Mexico, announces the association of:

W. J. Nelson, Jr., M.S., M.D.; E.E.N.T., Bronchoscopy and Esophagoscopy, formerly of the Staff of Charity Hospital, New Orleans, Louisiana.

P. A. Duff, M.D., Med. Sc.D.; Urology, formerly of the Staff of Columbia University-Presbyterian Hospital, The Medical Center, New York City, New York.

J. R. Maxfield, Jr., A.B., M.D.; Radiology, Diplomate of the American Board of Radiology, formerly of the Staff of the University of California Medical School and Hospital, The Medical Center, San Francisco, California.

## AUXILIARY NEWS

### El Paso

THE WOMAN'S AUXILIARY TO THE EL PASO COUNTY MEDICAL ASSOCIATION met at the home of Mrs. James J. Gorman on October 14th at 3 o'clock. The president, Mrs. James W. Laws presided, and the business of the organization which had accumulated during the summer was taken care of. The president then introduced the new members, Mrs. Norman C. Giere, Mrs. B. L. Goodloe, and Mrs. Newton F. Walker. She also introduced Mrs. Hines Haffner and Mrs. M. S. Hart, whose husbands have gone into practice in El Paso recently.

Following the meeting Dr. W. R. Jamieson, who is a colonel in the Medical Reserve of the Army, explained in detail the work of the doctors in the country in relation to defense. It was a very instructive discussion of the problem uppermost in the minds of most of those attending the meeting.

Just before the social hour two high school students played several accordion duets which were well played and very much enjoyed.

The hostesses for the afternoon who assisted Mrs. Gorman were: Mesdames S. D. Armistead, Chester D. Awe, F. O. Barrett, J. Travis Bennett, A. P. Black, Louis W. Breck, Bloyce Britton, W. W. Britton, C. P. Brown, W. L. Brown, George Brunner, Ira J. Bush, Arthur H. Butler, J. W. Cathcart, E. G. Causey, H. C. Caylor, Branch Craige, E. J. Cummins, Wm. J. Davis and Howard P. Deady.

—Julia N. Breck.

## MISCELLANY

### CHEMICAL WARFARE

From the tactical standpoint, chemical agents are classified according to their primary use as: Harassing agents, which annoy, discomfort, and impede the enemy, without permanent effects;

Casualty agents, which will produce casualties among personnel;

Screening agents, which produce screening smoke;

Incendiary agents, which generate sufficient heat to start fires in ordinary materials.

Chemical agents are classified on a basis of the length of time which an agent will remain on the ground at the point of release in a concentration great enough to be effective against unprotected personnel. If this time exceeds ten minutes, the agent is classed as persistent, and if this time is less than ten minutes, the agent is classed as non-persistent.

Finally, chemical agents are classified according to their physiological effect as:

Lung irritants—agents which when breathed cause irritation of the respiratory tract;

Vesicants—agents which attack the skin, producing burns;

Lacrimators—agents which produce a copious flow of tears and intense temporary pain in the eyes;

Sternutators — agents which when breathed cause sneezing, accompanied or followed by coughing, vomiting, headache and extreme although temporary physical disability. The terms sternutator and irritant smoke are used interchangeably;

Direct nerve poisons—agents which affect directly the heart action, nerve reflexes, or interfere with the absorption or assimilation of oxygen;

Incendiary—agents which produce heat burns when in contact with the body.

—Jr. Ind. St. Med. Assoc.

### MEDICINE AND NATIONAL DEFENSE

The human ability to postpone consideration of consequences of mass action is amazing. He becomes so engrossed in the action per se that the response to the action is considered not in possibilities but only in the light of his own projected desires.

Since man first began quarreling on a large scale with his neighbor, the result has been repeated over and over. The vicious cycle—provocation, war, famine and pestilence has never been broken for any prolonged period of time. Even isolation is no longer considered as conferring immunity to these disasters. While Europe is certain of the consequences of the wild ride of the Four Horsemen, we in the United States, if the present trend of thinking would be an indication,

feel that if we must enter a conflict, preparation for it and its results had better begin at once.

Labor, agriculture, transportation and consumer must function with teamwork precision to provide the materials of preparedness. Man power must be mobilized, but it is obvious that ships, guns and planes are of little value without the ability to man them.

The medical profession—our calling—is one of peace and humanitarianism. War will not change it. It does seem rather illogical to prepare a person physically, protect him in his environment, only to see him later as a broken victim of an instrument of destruction. But such is war and modern methods of warfare.

However, there is another side to our preparedness program. What of our civilian population? What of our profession? During the last war many communities were left without adequate medical care through enlistment of physicians. Many a physician returned and upon demobilization found that his practice was gone and again had to begin from scratch. Such things should not be permitted to occur again.

The extent of our problem in national preparedness is much greater than generally recognized. It takes time to produce vaccines and serums. Importation of foreign made drugs and supplies is handicapped. The urgency of coordination of all medical and public health resources has been stressed by Surgeon General Thomas Parran.

A few of the prominent health problems involved in a program of national defense are as follows

1. The recruiting of professional personnel.
2. Provision of the manufacture and storage of sufficient medical and sanitary supplies, vaccines and serums.
3. The provision and maintenance of adequate medical service to the civilian population.
4. The careful planning of measures to combat those diseases known to be particularly hazardous to troop concentrations.
5. Provision of research service in practical problems peculiar to war operations.

—Del. St. Med. Jo.

### CLASSIFICATION OF ARTHRITIS

- I. Infectious Arthritis
  - (a) Of proved etiology.
- II. Probably Infectious; etiology unproved.
  - (a) Arthritis of rheumatic fever.
  - (b) Rheumatoid arthritis (atrophic arthritis; chronic infectious arthritis)
    1. Adult type.
    2. Juvenile type (Still's disease)
    3. Ankylosing spondylitis (Marie-Strumpell).
    4. Psoriatic arthritis.
  - (c) Arthritis associate with various infections.



### III. Degenerative arthritis (osteoarthritis; hypertrophic arthritis).

- (a) Generalized; etiology unknown.
- (b) Localized.
  1. Secondary to trauma.
  2. Secondary to structural abnormality.
  3. Secondary to previous infectious arthritis.
  4. Etiology unknown.

### IV. Arthritis associated with disturbance of metabolism.

- (a) Gout.
- (b) Arthritis manifestations of other metabolic diseases.

### V. Arthritis of Neuropathic origin.

- (a) Secondary to tabes dorsalis.
- (b) Secondary to syringomyelia.
- (c) secondary to peripheral nerve lesions.

### VI. Miscellaneous forms.

- (a) Arthritis of serum sickness.
- (b) Arthritis of hemophilia.
- (c) Intermittent hydra-arthritis.

—*Minn. Med*

## BLACKGUARDS

In his speech before the Fifth District Branch, Dr. James M. Flynn, president of the Medical Society of the State of New York, flayed verbally those few physicians in the state who "cut corners," as he termed the unethical practices to which some resort. He pointed out that every community has a few physicians who are not honest with themselves, their fellow practitioners, or with their patients. Yet it is those few men who give the profession a bad name. It is they whose questionable acts are cited as examples, who provide arguments for the advocates of state medicine and provoke public criticism and censure. The public does not discriminate, and falls into the error of ascribing to the many the faults of the few.

It appears to us that Dr. Flynn's point is well taken and, important at any time, is doubly so now. Business in the professions have always been menaced by a small number of racketeers, men of antisocial nature, human vultures paying only lip service to the law or using it to gain their selfish ends. Cynically, they thrive on the misfortunes of others and exploit the poor and the ignorant. In times of stress and unrest, danger or calamity they thrive on the preoccupation of their professional brethren with urgent affairs and prey upon a public harassed by fright and heavy cares.

They are the hatchet men; the exactors of big fees; the bill padders; the advocates of unnecessary treatment; the scoundrels of the scalpel who do the unnecessary operations; the relief rascals; the pusillanimous pill pushers—to name a few. Sordid and conscienceless as they are, they are so small in number in the medical profession as

to be conspicuous. But as a rotten apple will cause the whole barrel to spoil, so these human cankerworms can damage the reputation of an entire profession.

—*N. Y. St. J. of Med.*

## DIAGNOSTIC SIGNS IN SPINAL CORD TUMOR

### Early

1. Root pains—aggravated by coughing, sneezing, straining
2. Motor weakness
3. Sensory disturbance
4. Residual urine
5. Increased deep reflexes
6. Increased spinal fluid protein
7. Spinal fluid pressure normal
8. Partial block by Queckenstedt
9. Level of tumor revealed by air or lipiodol
10. Bone changes by x-ray

### Late

1. Root pains—same characteristics
2. Paralysis
3. Anesthetic level
4. Urinary incontinence
5. Increased or absent reflexes
6. Froin's syndrome
7. Spinal fluid pressure low
8. Complete block
9. Level of tumor revealed by air or lipiodol
10. Bone changes by x-ray

—*Tex. St. J. of Med.*

## ARE AMERICANS GETTING SOFT?

One reason advanced for the downfall of France is that she had gone soft. Too many people wanted to belong to the "preferred class." They believed that a great deal was due them for a little effort, and though they contributed little, they demanded that they be amply rewarded. The result was that there was internal strife, distrust and weakening of moral fiber. In consequence there followed a general breakdown of the country's social and economic structure which led in part to her defeat.

Is the United States in danger of pursuing the same course? To those who read their newspapers thoughtfully, there is ample evidence of a trend in this direction. Reports emanating from various parts of the country give the impression that the robust and courageous spirit which helped build this country into a great nation is waning. One reads of people being supported by the government rather than working, even though their income may be considerably less. Labor unions are endeavoring to reduce working hours to a number that fifty years ago would have seemed incredible. Youth organizations proclaim their allegiance to foreign isms and protest against preparedness plans. Peace advocates go so far as to

assert their willingness to be subjugated rather than fight in the defense of their country. Politicians are playing the dangerous game of straddling the fence where issues which affect our very existence are concerned.

Steps which have been taken to improve the lot of the worker are deserving of the highest commendation. Free speech should be defended as fundamental to our form of government. This country should advocate and earnestly promote peace. But there is a point in all these things beyond which this country cannot go with safety. It is a well-known biological principle that suffering and overcoming hardships is necessary and important in developing a strong people. Too much paternalism, too much coddling, and too much comfort will contribute to disintegration. Unless our people are willing to forego some of what they now think are necessities, and if necessary fight for the continued existence of our country as we know it, we may well find ourselves in a critical situation.

Reports on the health of the nation reveal that the American people generally are in much better physical condition than they have ever been in their history. It is reported that a high percentage of those now enlisting in the military forces easily met the physical requirements. Apparently, more than mere physical well-being is

necessary. Can it be that due to soft living we have become morally and spiritually weak? What happens to this country in the next few months may provide the answer. —*Med. Ann. D. of C.*

### MEDICAL GROUP OPENS SESSION WITH ASSEMBLY

The Southwestern Medical Association opened the 26th annual session here today with general assemblies and luncheon round table discussions and then prepared itself for a Thanksgiving banquet and dinner dance at 8:30 o'clock tonight at the Pioneer hotel, convention headquarters.

Approximately 300 doctors and their wives from Arizona, New Mexico, West Texas and Northern Mexico are expected to attend the three days of annual meetings and clinical conferences. Here to address the various groups are seven nationally known specialists from all sections of the country.

### SESSIONS OPEN

Today's sessions were opened with a general assembly at 9:30 o'clock this morning. "Graduate Medical Education" was the subject of the initial talk by Dr. Orville Egbert, El Paso, president of the association.

Dr. Carleton Mathewson, jr., speaking on "Early Management of Head Injuries from the Point of View of the General Practitioner," correlated his discussion with the numerous highway accidents

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of the present and the acquaintance with such injuries in bomb-torn England and Europe.

He urged the treatment of such types of injuries by local practitioners rather than moving patients to large cities to be attended by specialists.

Also appearing on the morning program was Dr. Willard Allen of Washington University, St. Louis.

#### ROUND-TABLE PARLEY

Luncheon round-table discussions took the spotlight at noon for specialists in medical, anesthesia, surgery, obstetrics and gynecology and ophthalmology fields.

Dr. Howell Randolph, Phoenix, and Dr. R. B.

Homan, El Paso, were chairmen of the two medical sections. Speakers were Dr. George Fahr, professor of medicine at the University of Minnesota, and Dr. T. T. Mackie, professor of medicine at Columbia University.

Dr. J. B. Van Horn, Tucson, presided over the anesthesia discussion, at which Dr. John Lundy, department of anesthesia, Mayo Clinic, spoke.

#### SURGERY SECTIONS

The two surgery sections were presided over by Dr. E. Payne Palmer, Phoenix, and Dr. Felix Miller, El Paso. Speaking before the group were Dr. Richard B. Cattell, Lahey Clinic, Boston, and Dr. Carleton Mathewson, Jr., associate professor of surgery at Stanford University School of Medicine.

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Dr. R. K. Smith, Tucson, presided and Dr. Willard Allen, Washington University, St. Louis, spoke before the obstetrics and gynecology section. Dr. William L. Benedict, department of ophthalmology, Mayo Clinic, spoke before the eye, ear, nose and throat group.

Scheduled to speak at a general assembly this afternoon were Drs. T. T. Mackie, John Lundy and Richard B. Cattell.

Doctors will convene for another general assembly at 9:30 a. m. tomorrow and additional round table discussions at noon. General assemblies will be held tomorrow afternoon and Saturday morning. A luncheon for women visitors will be held at 1 p. m. tomorrow at the Arizona Inn and a buffet supper will be served at the Pioneer hotel tomorrow night for the women and the escorts.

Until the convention closes Saturday, exhibits have been arranged on the mezzanine of the Pioneer hotel. A special program of entertainment association and convention guests. A golf tournament is set for Saturday afternoon and a special block of seats has been set aside for the Arizona-New Mexico football game that evening. —*Tucson Daily Citizen*, Nov. 21, 1940.

#### DOCTORS SELECT DR. C. A. THOMAS NEXT PRESIDENT

Dr. William H. Woolston, Albuquerque, New Mexico, was installed today as president of the Southwestern Medical Association and Dr. C. A. Thomas of Tucson was elevated to president-

elect, to take office next November at the convention to be held in El Paso.

Dr. K. D. Lynch, El Paso, was elected first vice-president, Dr. J. W. Hannett, Albuquerque, second vice-president, and Dr. Louis W. Breck, El Paso, secretary-treasurer.

Dr. Woolston succeeded Dr. Orville E. Egbert, El Paso, as the three-day annual convention drew to a close.

#### TUCSONIAN NAMED

The Southwestern Academy of Eye, Ear, Nose and Throat elected Dr. Franklin H. Maury, Tucson, president. The group will meet in El Paso during the Southwestern Medical Association meetings. Dr. A. C. Cruthird, Phoenix, was re-elected secretary.—*Tucson Citizen*, Nov. 23, 1940.

### BOOK NOTES

METHODS FOR DIAGNOSTIC BACTERIOLOGY, by Isabelle G. Schaub, A. B., Assistant in Bacteriology, Department of Pathology, The Johns Hopkins University School of Medicine, and M. Kathleen Foley, A. B., Bacteriologist in charge of the Diagnostic Bacteriological Laboratory of the Medical Clinic. The Johns Hopkins Hospital, Baltimore. Pp. 313. Cloth \$3.00. St. Louis, The C. V. Mosby Co., 1940.

This is an excellent detailed outline of laboratory methods in culture, study and identification of the various bacteria. Space is provided opposite each page for the insertion of one's own notes. This should aid greatly in making this a valuable personal piece of equipment for use in the laboratory.

#### COUNCIL ACCEPTED

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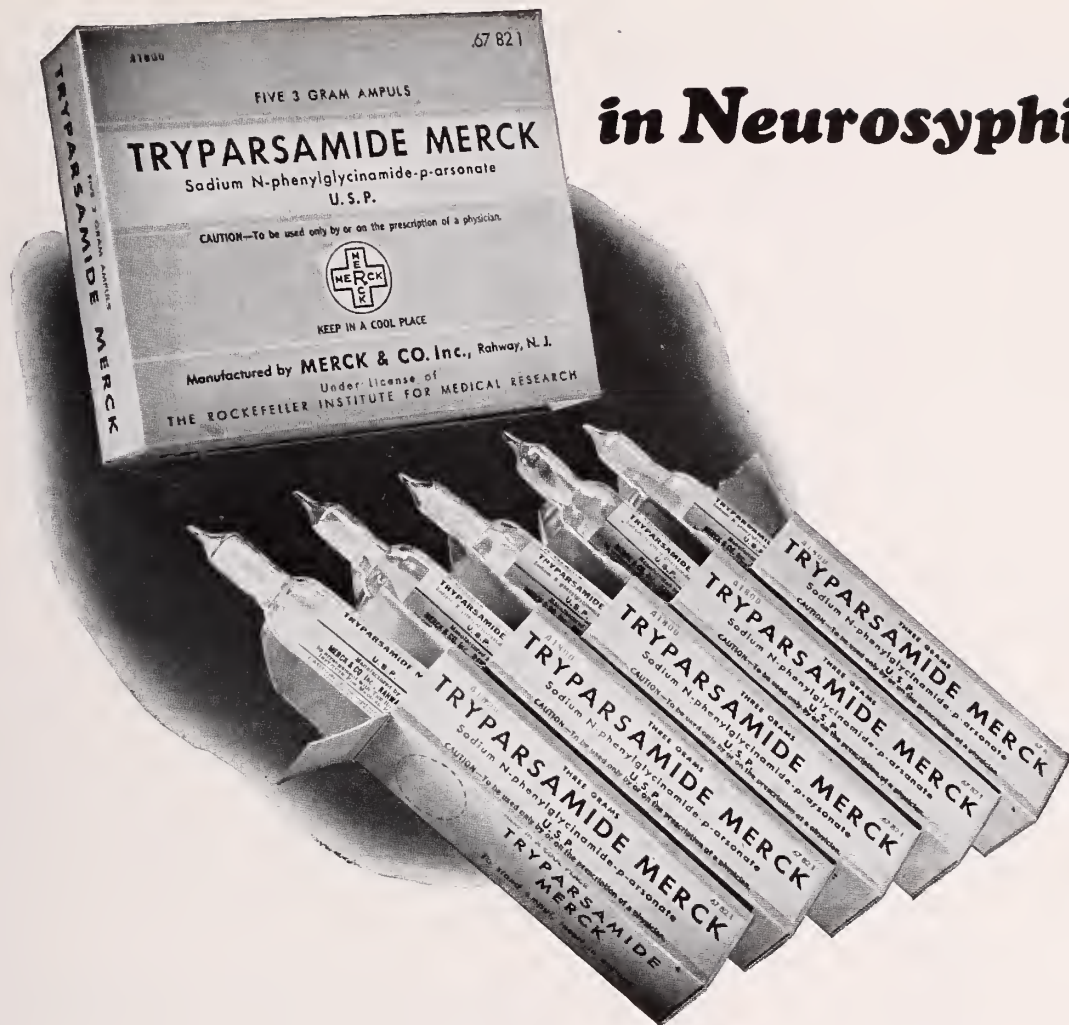
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**THE PRACTICE OF MEDICINE.** by Jonathan Campbell Meakins, M.D., LL.D.; Professor of Medicine and Director of the Department of Medicine, McGill University; Physician-in-Chief, Royal Victoria Hospital, Montreal; formerly Professor of Therapeutics and Clinical Medicine, University of Edinburgh. Fellow of the Royal Society of Edinburgh; Fellow of the Royal Society of Canada; Fellow of the Royal College of Physicians, London; Fellow of the Royal College of Physicians, Edinburgh; Honorary Fellow of the Royal College of Surgeons, Edinburgh; Fellow of the Royal College of Physicians, Canada; Fellow of the American College of Physicians. Pp. 1430 including index. 562 illustrations including 48 in color. 3rd edition. Fabrikoid. \$10.00. St. Louis, The C. V. Mosby Co., 1940.

In this third edition the author has again made use of a large number of well chosen illustrations. One's interest in studying any chapter in the book is greatly enhanced by the fine illustrations. Many are in color, chosen from various well known texts for specialists. The seeker of information will find this one of the easiest, most complete sources of knowledge to consult. The author has done a splendid piece of work.

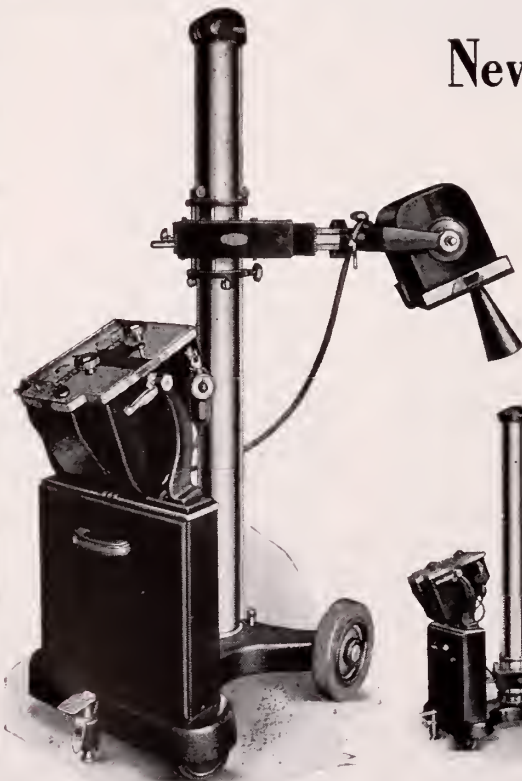
**OBSTETRICS IN GENERAL PRACTICE.** by J. P. Greenhill, B.S., M.D., F.A.C.S.; Professor of Obstetrics and Gynecology, Loyola University Medical School, Chicago; Professor of Gynecology, Cook County Graduate School of Medicine; Attending Gynecologist, Cook County Hospital; Co-Editor of the YEAR BOOK OF OBSTETRICS & GYNECOLOGY; Author of OFFICE GYNECOLOGY. Pp. 448 with index. Illustrated. Cloth. \$3.50. Chicago, The Year Book Publishers, Inc. 1940.

Well illustrated and simply written, this book is a valuable addition to the library of the general practitioner. It presents, in simplified form, the newer knowledge concerning the general practice of obstetrics. Elementary knowledge, to be sure, but at that not too well known and practiced by all men doing obstetrics.

**PSYCHIATRY FOR NURSES;** Louis J. Karnosh, B.S., Sc.D., M.D.; Associate Clinical Professor of Nervous Diseases; School of Medicine, Western Reserve University; Director Neuropsychiatry, City Hospital, Cleveland; Consulting Neuropsychiatrist, Cleveland Clinic; and Edith B. Gage, R. N.; Supervisor, Neuropsychiatric Division, City Hospital, Cleveland. Pp. 327. Illustrations 34. Cloth. \$2.75. Saint Louis, The C. V. Mosby Co. 1940.

This book illustrates one of our pet peeves. Modern schools of nursing are in many cases not schools of nursing at all, but 4th or 5th rate medical schools. We have long felt that it is a decided mistake to attempt to teach nurses very much regarding the medical specialties. God knows that the medical student in a class A medical college has a difficult enough time, for all his detailed training, to grasp more than a notion of what the various specialties are all about. How then can anyone reasonably expect a nurse with her vastly inferior scientific training to get more than an idea that because she can rattle off a few technical terms she is therefore learned in the ways of medicine. Too many nurses forget that after all they are nurses, and because of a few crammed sessions in their curriculum get fancy dreams about their great medical knowledge. The nurse who is going to be employed at a psychiatric institution would probably be concerned with much of the material in this text. The general nurse, however, who is going to administer hypodermics and write copious notes regarding the patient's flatus would certainly not be concerned with a great part of the information contained in this book.

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**CLINICAL HEART DISEASE:** By Samuel A Levine, M.D., F.A.C.P., Assistant Professor of Medicine, Harvard Medical School; Senior Associate in Medicine, Peter Bent Brigham Hospital, Boston; Consultant Cardiologist, Newton Hospital; Physician, New England Baptist Hospital, Boston. Second Edition, Revised and Reset. 495 pages with 109 illustrations. Philadelphia and London: W. B. Saunders Company, 1920. Cloth, \$6.00.

This is the second edition of one of the best books ever written on clinical heart disease. There is a highly valuable chapter on clinical electrocardiography. One of the interesting chapters in the book is entitled "The Medico Legal Aspects of Heart Disease." This chapter is full of good sense and information. Because of the mass of industrial litigation now clogging the courts of the land it would seem that this topic should be afforded more space in this text. Modern terminology has been introduced together with approved nomenclature as recommended by the committee of the American Heart Association and the Cardiac Society of Great Britain and Ireland.

#### THE SCHOOL CHILD'S BREAKFAST

Many a child is scolded for dullness when he should be treated for undernourishment. In hundreds of homes a "continental" breakfast of a roll and coffee is the rule. If, day after day, a child breaks the night's fast of twelve hours on this scant fare, small wonder that he is listless, nervous, or stupid at school. A happy solution to the problem is Pabulum (Mead's Cereal cooked and dried). Six times richer than fluid milk in calcium, ten times higher than spinach in iron, containing vitamins B<sub>1</sub> and G, Pabulum furnishes protective factors especially needed by the school child. The ease with which Pabulum can be prepared enlists the mother's cooperation in serving a nutritious breakfast. This palatable cereal requires no further cooking and can be prepared simply by adding milk or water of any desired temperature.

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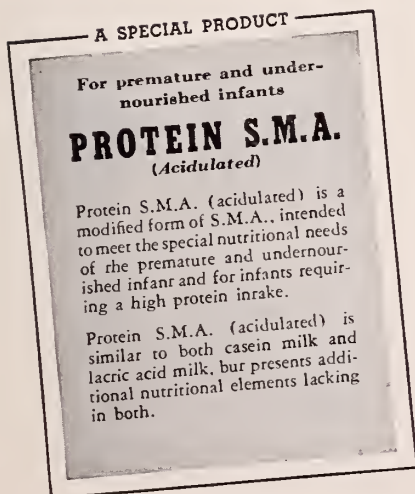
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